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Fiftieth Annual Meeting—Canadian Public Health Association and the Nova Scotia Branch May 31, June 1 and 2, 1960, Nova Scotian Hotel, Halifax, Nova Scotia

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FOR FURTHER INFORMATION write to: Dr. A. J. Rhodes,
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The Lengthening Life Span[1]

A. H. SELLERS,[2] M.D., D.P.H.

THE intensity and character of the need and the demand for health services is influenced to a large degree by demographic and social changes in our population. In common with other provinces of Canada and other countries, particularly in the Western World, the twentieth century has brought sharp changes in Ontario's population structure, in mortality and expectation of life, and in the character of the major health problems in terms of needs for services and facilities.

There have been three significant features in our health experience over the past fifty years: (*a*) large reductions in the mortality rate in all age groups under 70 years, especially in infants and in persons under the age of 50 years; (*b*) large reductions in both morbidity and mortality from acute infective diseases at all ages; (*c*) substantial prolongation of the lives of persons with chronic disease or disability as a result of more effective control measures, e.g. insulin for diabetes mellitus, liver extract for pernicious anemia, the use of antibiotics and certain surgical procedures.

Mortality Changes

During the past fifty years, outstanding reductions in mortality have been made in Ontario. These reductions have been largely in the mortality from a comparatively few causes, spearheaded by the reductions in infant and maternal mortality, and in the mortality from the infective diseases (particularly diphtheria, tuberculosis, typhoid fever), respiratory diseases, rheumatic heart disease, and appendicitis. Deaths from diphtheria declined from 722 in 1901 to 0 in 1958; deaths from typhoid fever fell from 500 in 1901 to 0 in 1958; deaths from tuberculosis dropped from 3,243 to 186 last year.

[1]Presented at the tenth annual meeting of the Ontario Public Health Association, September 28–30, 1959, Toronto, Ont.

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In the early years of the twentieth century over 20% of all recorded deaths were due to the infective diseases. This proportion has fallen in successive 10-year periods to 13.5%, 11.4%, 7.8%, 4.2% and 2.0% and in 1955–57 to 1.0% (Table I).

TABLE I—Mortality from all Causes and Infective Diseases, Ontario, 1900–1957

Period	Deaths, All Causes		Deaths, Infective Diseases		
	Number	Rate*	Number	Rate*	% Total Deaths
1900–02	83,756	1,279	17,172	262	20.5
1910–12	95,360	1,258	12,872	170	13.5
1920–22	109,025	1,238	12,475	142	11.4
1930–32	109,487	1,064	8,527	83	7.8
1940–42	116,848	1,023	4,905	43	4.2
1950–52	132,331	955	2,668	19	2.0
1955–57	141,829	870	1,409	86	1.0

*Per 100,000 population.

This reduction, amounting to 95%, has been achieved by the collective effect of a number of causes, including improvements in water supplies and sanitation, decline in virulence of infective agents or increase in natural immunity, protection of the community by immunization procedures, improvements in medical care, personal hygiene, education and housing; new discoveries in chemotherapy.

The mortality changes have been characterized by a marked decline in the mortality rate in all age groups under 50 years, that in the 40–49 group amounting to over half of the rate in 1900–02; in the 30–39 age group to three-quarters; and in all age groups under 30 years to fully four-fifths of the rate in 1900–02 (Table II).

TABLE II—Mean Death Rates by Age-Group, Ontario—Selected Periods

Age	1900–02	1940–42		1955–57	
		Rate	Per Cent*	Rate	Per Cent*
1–4	10.78	2.48	23.0	1.24	14.7
5–9	3.52	1.04	29.5	0.56	15.9
10–14	2.46	0.90	36.6	0.48	19.5
15–19	3.81	1.42	37.3	0.87	22.8
20–29	5.61	1.85	33.0	1.11	19.8
30–39	6.50	2.68	41.2	1.50	23.1
40–49	8.14	5.14	63.1	3.78	46.4
50–59	12.69	12.10	95.4	10.17	79.4
60–69	27.62	27.40	99.2	24.88	90.1
70+	95.83	92.03	96.0	81.32	84.9

*Per cent of rates in 1900-02

By contrast, the total death rates in the age-groups 50–59, 60–69 and 70 years and over have, until fairly recent years, shown very little change; particularly is this so among males (Table III).

TABLE III—AGE-SPECIFIC MORTALITY RATES BY SEX,* ONTARIO 1930–32 VS 1955–57

Age	Males			Females		
	1930–32	1955–57	% Change	1930–32	1955–57	% Change
Under 1	8,207	3,023	−63.2	6,492	2,327	−64.2
1–4	495	135	−72.7	423	114	−73.0
5–14	175	64	−63.8	130	40	−69.0
15–24	268	143	−46.7	229	53	−77.0
25–34	337	159	−52.8	328	83	−74.7
35–44	487	273	−43.8	458	174	−62.2
45–54	904	799	−11.6	793	458	−42.3
55–64	1,992	2,071	+ 4.0	1,695	1,122	−33.8
65–74	4,703	4,692	− 0.2	4,031	2,937	−27.2
75 and over	13,041	12,223	− 6.3	12,588	10,325	−18.0
Total	1,111	984	−11.4	1,015	755	−25.7

*Per 100,000 population.

This fact may in part be due to the sub-standard people in these age groups saved from earlier death by the factors which have combined to reduce mortality at ages under 50 years. There is no justification, however, for "the cynical notion that the causes of death after age 65 are not of great importance".

Sex Differences in Mortality Trends

There is a sharp sex difference in the mortality rates throughout the life span and these differences have been greatly accentuated in the last 25 years. While there has been a sizable reduction in female mortality in all age groups 50 and over, the changes in the male rates have in fact been negligible and the excess of male mortality over mortality for females has very substantially increased! The major portion of this male excess is due to accidents and to cardiovascular-renal disease.

EXPECTATION OF LIFE

These several developments have had certain known results: (*a*) an increase in the average length or expectation of life; (*b*) an increase in both the absolute number and the proportion of persons alive at older ages; (*c*) an increase in the number of "sub-standard" individuals, i.e. those with disabilities and impairments, who reach older ages, e.g. persons with diabetes, pernicious anemia, rheumatic heart disease; (*d*) an increase in the prevalence, not incidence, of those diseases common to the older age groups, many of which are chronic in nature such as cardiovascular-renal conditions, neoplasms, diabetes, arthritis.

The expectation of life or average length of life expresses the mean duration of life to be expected by newborn infants or by people who attain a given age, or the average number of years that a person of a given age will probably survive, based on the assumption that the death rates will not change.

The average duration of life has progressively increased from ancient times, but it has increased more in the past century than in all prior centuries since the dawn of civilization. The average length of life of prehistoric man was perhaps 18 years. Longevity in Roman Egypt about two thousand years ago has been estimated by Karl Pearson to have been about 22 years. Figures for the Middle Ages suggest an expectation of life at birth of possibly 35 years.

According to life tables constructed by Dr. William Farr for England and Wales covering the period 1838 to 1854, the average length of life had been increased to 40.9 years, a gain of a little more than five years over the figures for the Middle Ages. In the United States, the average length of life was 49.2 years in the period 1900–1902.

Spectacular gains in life expectancy were achieved during the first half of the twentieth century and today (in 1956) the expectation of life at birth in Ontario is 67.8 years for males and 73.6 years for females, gains of 6.5 and 9.7 years respectively in less than a generation (Table IV).

TABLE IV—Expectation of Life at Certain Ages, By Sex—Ontario

Year	Males			Females		
	Birth	50	65	Birth	50	65
1901	48.2	20.8	11.5	51.1	21.9	12.2
1931	61.3	23.3	12.7	63.9	24.5	13.5
1941	64.6	23.1	12.6	68.4	25.4	14.0
1951	66.5	23.2	12.8	71.6	26.7	14.8
1956	67.8	23.5	13.0	73.6	27.7	15.6

Source: Life Tables for U.S.A. for 1901 and for Ontario for 1931, 1941, 1951 (tentative) and 1956 (tentative).

To express this fact in a different way, under the mortality conditions which prevailed in 1901, a group of 100,000 male babies born in 1901 would be reduced to 39,245 by the time they reached their 65th year, while with the death rates of 1955–57 the number of survivors at age 65 in Ontario would be 67,409. In other words the chances of a boy born in 1901 celebrating his sixty-fifth birthday were less than 40 in 100. Today the chances are 67 in 100. For females the chances are 80 in 100. Under prevailing mortality rates, half the girls now being born will live to age 77 and half the boys to age 72.

During the last 55 years the expectation of life at birth has improved by 20 years for boys and by 23 years for girls. In 1901, a young man of 18 had 51 chances in 100 of surviving to 65; in 1956 this figure was 70 in 100. Medical and public health leaders could hardly have expected such gains within two generations. Even in the last 15 years the average length of life has increased by three years for males and by five years for females.

Expectation of Life at Various Ages, By Sex

Most of the gains in expectation of life have been made at ages under 50 years (Table V).

TABLE V—The Gain in Life Expectancy, Ontario, 1930–32 to 1955–57

Age	Male			Female		
	1931	1956	Gain	1931	1956	Gain
0	61.3	67.8	6.5	63.9	73.6	9.7
5	62.2	65.1	2.9	63.9	70.6	6.7
15	53.2	55.5	2.3	54.6	60.8	6.2
25	44.5	46.2	1.7	45.8	51.1	5.3
35	35.8	36.9	1.1	37.2	41.5	4.3
45	27.4	27.7	0.3	28.6	32.1	3.5
55	19.5	19.6	0.1	20.6	23.4	2.8
65	12.7	13.0	0.3	13.5	15.6	2.1
75	7.3	7.8	0.5	7.7	9.1	1.4

There has been comparatively little gain in the expectation of life in the age groups 50 and over, and here the sex differences continue to be sharp. For males, the expectation of life at age 65 is greater now by only 1.5 years than it was in 1901; for females it is greater by 3.4 years. At age 50 it is greater by 2.7 years for males and by 5.8 years for females, but in the past 25 years, i.e. since 1931, the gain in life expectancy for males at age 50 is only about three months compared with three years for females. A similar differential exists at age 65.

The difference between the male and the female expectations has grown progressively wider over the years, amounting now to almost six years at birth, four years at age 50 and two and one-half years at age 65.

The mean duration of life to be expected among baby girls born in Canada in 1956 was 73.6 years and for males it was 67.8 years; at age 50 the expectations were 27.7 and 23.5 years. The average length of life remaining to Ontario males at age 65 is 13.0 years; for females 15.6 years. The more vigorous will of course live much longer than the average.

The Future Outlook for Longevity

The outlook seems favourable for further gains in the expectation of life in the future. We still have a higher infant mortality rate than in England and Wales, United States, Sweden, Holland, New Zealand, and Australia. Wide application will be made of existing knowledge in medical and sanitary science and further advances will be made too in our standard of living, nutrition, housing conditions, protection against occupational hazards and accidents. All these forces can effect further reductions in mortality and thus improve longevity. Discoveries in the fields of cancer and the degenerative diseases could add significantly to the present average length of life.

Changes in Our Population Structure

Control of many infective diseases, better medical care, better education, better working conditions, better nutrition, hygiene and sanitation; all the forces mentioned have been responsible for a lowered mortality, a greatly increased life expectancy, and have played a large part in the profound modification of our population structure, which influences the whole picture of health and disease and which will affect the whole structure of our society.

Until fairly recent decades our population was characterized by its youthfulness. Heavy immigration of young men and women and high birth rates swelled the proportion of people in the younger age groups and diminished the relative importance of those in the age group 65 years and over. Later, immigration was reduced, our birth rates declined and life conservation at the earlier ages brought more and more of the population into the older age brackets. In the post-war years immigration and sustained high birth rates, and particularly the latter, have combined to slow up the "aging" process due largely to the substantial increases in population under 20 years.

There is no arbitrary boundary between senility and old age. Many people at 65 are still vigorous and gainfully employed, while others are showing signs of aging. For convenience, however, the term "old" may be associated with those who have attained their 65th birthday.

Ontario's population has grown from just over two million in 1901 to 5.4 million in 1956 and it is still growing at the rate of about 200,000 or 3% per year (Table VI).

TABLE VI—Ontario's Growing Population§—1901–1975

Census Year	All Ages		Ages 65 and Over			Ages 20–64	
	Number	Ratio to 1901	Number	Per Cent of Total	Ratio to 1901	Number	Per Cent of Total
1901	2,182.9	1.00	120.6	5.5	1.00	1,147.4	52.6
1911	2,527.3	1.16	142.8	5.6	1.18	1,402.4	55.5
1921	2,933.7	1.34	172.3	5.9	1.43	1,621.0	55.2
1931	3,431.7	1.57	234.2	6.8	1.94	1,919.5	55.9
1941	3,787.7	1.74	301.3	8.0	2.50	2,223.0	58.7
1951	4,597.6	2.11	400.4	8.7	3.32	2,642.2	57.5
1956	5,404.9	2.48	454.4	8.4	3.77	2,985.3	55.2
1960*	5,863.0	2.68	486.0	8.3	4.03	3,115.0	53.1
1965*	6,555.0	3.00	538.0	8.2	4.46	3,386.0	51.6
1970*	7,314.0	3.35	593.0	8.1	4.92	3,739.0	51.1
1975*	8,184.0	3.75	661.0	8.1	5.48	4,192.0	51.2

*Estimated population, Gordon Report.
§In thousands.

In the meantime the number of older people in our population has very substantially increased. In 1901 there were 120,600 persons aged 65 and over in Ontario; 30 years later, in 1931, this figure had doubled to 234,200 and 25 years later, by 1956, it had almost doubled again at 454,400. The number of people in the age group 65 and over is now approaching half a million and is increasing at the rate of 10,000 per year. It is estimated that in 1960 the numbers will increase to 486,000 and by 1970 to 593,000.

In 1901 only 55 persons in every 1,000 were 65 years of age or over. In 1931, the figure was 68 and in 1951 it was 87. Due to the continuing high birth rate since 1946 and substantial immigration, the relative but not the absolute size of the older age group will tend to diminish and the percentage of the population 65 and over will decrease in the future; indeed, this trend is already evident (Table VI), falling from 8.7% in 1951 to 8.4% in 1956. By 1970, it is estimated that 8.1% of our population or one in 12 will be 65 years of age or over.

Another important effect of the reduction in our mortality rates is the greatly increased number and proportion of the population who survive to begin and to complete the working years of life. This tremendously important point is often obscured by the emphasis placed upon the problems of "old age". The improved mortality rates at all ages under 50 years ensure us a greatly increased number of years of productive work (Table VII).

TABLE VII—Ontario's Population by Age—1901–1970

Age	1901		1931		1956		1970	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
0–14	685.2	31.4	958.9	28.0	1,618.4	29.9	2,322.0	31.8
15–44	1,050.3	48.1	1,602.5	46.7	2,319.9	43.0	2,986.0	40.8
45–64	326.8	15.0	636.1	18.5	1,012.2	18.7	1,413.0	19.3
65+	120.6	5.5	234.2	6.8	454.4	8.4	593.0	8.1
Total	2,182.9	100.0	3,431.7	100.0	5,404.9	100.0	7,314.0	100.0

The greatest proportionate increase in our population is in the age group 45–64 years. In 1901, 326,800 persons or 15% of our population were in the age group 45–64 years. At the 1956 census there were 1,012,200 persons or 19% of our population in the age group 45–64 years, and 454,400 or one in every 12 persons 65 years of age or over. By 1970 we will have something over 1,413,000 persons in the age group 45–64 years, and almost 600,000 at 65 years of age and over.

A useful measure of the impact of the lengthening life span and the aging of the population on our medical and public health commitments would be the numbers of retired individuals expressed per 1,000 persons in their working years. As an alternative we may use the ratios (per cent) of persons age 65 and over to the population at working ages and more specifically to males age 20–64 years (Table VIII).

TABLE VIII—ONTARIO'S OLDER CITIZENS—VARIOUS MEASURES, ONTARIO, 1901 TO 1975

Year	Population 65 and Over		Population 20–64		Males 20–64		Pop.65+ to Pop. 20–64	Pop.65+ to Males 20–64	Males 20–64 to Pop.65+
	No.	%	No.	%	No.	%	%	%	
1901	120.6	5.5	1,147.4	52.6	571.1	26.2	10.5	21.1	4.74
1911	142.8	5.6	1,402.4	55.5	729.6	28.9	10.2	19.6	5.11
1921	172.3	5.9	1,621.0	55.2	819.5	27.9	10.6	21.0	4.76
1931	234.2	6.8	1,919.5	55.9	984.0	28.7	12.2	23.8	4.20
1941	301.2	8.0	2,223.0	58.7	1,135.2	30.0	13.5	26.5	3.77
1951	400.4	8.7	2,642.2	57.5	1,330.0	28.9	15.2	30.1	3.32
1956	454.4	8.4	2,985.3	55.2	1,506.8	27.9	15.2	30.2	3.32
1960*	486.0	8.3	3,115.0	53.1	1,574.0	26.8	15.6	30.9	3.24
1965*	538.0	8.2	3,386.0	51.6	1,710.0	26.1	15.9	31.5	3.18
1970*	593.0	8.1	3,739.0	51.1	1,890.0	25.8	15.8	31.4	3.19
1975*	661.0	8.1	4,192.0	51.2	2,118.0	25.9	15.8	31.2	3.20

*Estimated populations, Gordon Report, 1956.

The relationship of the population 65 and over to males 20–64 years is of special interest. From 1901–1921 these two groups were in the ratio of one to five. By 1941 the ratio was one to four. At the last census (1956) the ratio was one to 3.3. In other words from 1901 to 1921 for every 100 males age 20–64 years there were 20 persons age 65 and over; in 1956 there were 30. Estimates to 1970 indicate that this figure will increase slightly to about 31 with 593,000 persons 65 and over and 1,890,000 males age 20–64 years.

THE HEALTH OF OLD PEOPLE

At the beginning of the century, the first and second ranks among our causes of death were held by tuberculosis and pneumonia. These two causes accounted for over one-fifth of the total mortality. Since then, they have fallen to fifteenth and seventh place and now contribute barely one-twentieth of all deaths. Today, cardiovascular-renal disease and cancer account for almost three-quarters of the deaths at all ages.

The changing picture in mortality may be summed up in the relative proportions of deaths under 50 years of age and 50 years and over. In 1900–02, 56.8% of all deaths were at ages under 50 years. Thirty years later, in 1930–32, the position was reversed, 62.2% of all deaths occurring at ages 50

years and over. Twenty-five years later still, in 1955–57, the picture is further accentuated; today about 80% (79.3%) of all deaths in Ontario (compared with 43.2% in 1901) occur among persons 50 years of age or over.

In 1953–1957 diseases of the cardiovascular-renal system (67.1%), cancer (14.6%), accidents (3.0%), diabetes, pneumonia and tuberculosis caused 91% of the deaths of persons at 65 years of age and over. Two-fifths of all deaths were attributed to diseases of the heart and coronary arteries.

The diseases which account for the majority of deaths in the older age groups are chronic or degenerative rather than acute or infectious. Their incidence is long term and relatively unvarying. Concerted efforts to reduce them have been started only fairly recently. While the expectation of life at age 50, 65 and above, especially in males, remains approximately the same as 20 or even 50 years ago, the health of old people as a group has already improved and it is inevitable that in the future we shall reduce the causes of invalidism at older ages, even simply as an indirect effect of accomplishments at ages under 65.

Public Health and Medical Issues

The changes in population structure and in particular the great increase in the number of individuals age 65 years and over has brought with it increased health requirements which we must plan and be prepared to meet. This need is not coming, it is here now.

The seriousness of the health issues involved in our present mortality picture and our lengthening life span are emphasized, not only by the greatly increasing numbers of persons at older ages, but by a number of established facts in sickness, hospitalization and health service experience. These are worthy of brief reference:

Incidence and Prevalence of Illness

Data from the Canadian Sickness Survey (1950–51) have provided ample evidence of the impact of the older age groups on the morbidity and health service load. Prevalence of illness and measures of disability increase sharply with age from young adult life, those for persons 65 years of age and over being 50 to 100% above the figures at ages 45–64 years (Table IX).

TABLE IX—Prevalence of Illness (Beginning of Survey)*

Age	Illnesses per 1,000		Per Cent of Persons	
	Any Illness	Disabling Illness	Any Illness	Disabling Illness
Under 15	50	20	4.6	1.8
15–24	50		4.7	
25–44	102	28	8.9	2.5
45–64	147	51	12.1	4.5
65+	256	100	18.6	7.0
All Ages	98	34	8.3	2.9

*Canadian Sickness Survey, 1950–51.

The percentage of persons disabled by sickness or injury at a given point of time, at ages 45–64 is twice, and at ages 65 and over is three times what it

is at ages 15–44 years. At ages 65 and over, 7.0% or one person in 14 has a disabling illness.

Disability Rates

The duration of disability or length of stay in bed or in hospital, whether expressed per person or per period, both increase three-fold at the older ages (Table X). The number of days of disabling sickness per person at all ages is 11.9 days; at ages 65 and over it is almost 27 days. For bed periods the figures are 5.6 days for all ages and 12.2 days for the older age groups (Table X).

TABLE X—Disability and Bed Periods*

Age	Disability Periods		Bed Periods	
	Aver. Days Per Person	Aver. Days Per Period	Aver. Days Per Person	Aver. Days Per Period
Under 15	10.4	6.8	5.3	4.9
15–24	8.4	9.2	3.8	5.9
25–44	9.3	9.9	4.8	6.7
45–64	15.3	17.5	6.2	9.8
65+	26.8	28.9	12.2	16.1
All Ages	11.9	10.8	5.6	6.9

*Canadian Sickness Survey, 1950–51.

Chronic Disease

There is a steep rise in the prevalence of chronic disease with age. At ages 70 and over the figure is five to six times what it is at younger ages. The recently established U.S. National Health Survey program has yielded a good deal of information on the relationship to age of morbidity and the need for health services. Apart from those persons hospitalized there is the larger group of people with some measure of chronic limitation of usual activity. These may be divided into those with "partial" and those with "major" limitation of activity (Table XI).

TABLE XI—Limitation of Activity vs Age

Age	Per Cent With	
	Partial Limitation	Major Limitation
Under 15	1.2	0.2
15–29	4.0	0.5
30–44	7.2	0.8
45–54	11.3	1.7
55–64	17.6	4.4
65–74	27.8	9.4
75+	31.1	23.7
All Ages	8.0	2.1

Source: U.S. National Health Survey Reports, 1958.

A measure of the reduced efficiency of the population is provided by expressing disability in terms of the time which usual activities are restricted (bed-disability days, work-loss days, and school-loss days). Here too there is a steep gradient with age (Table XII).

TABLE XII—Reduced Efficiency by Age

Age	Per Cent Total Person Years		Days per Person per Year	
	Restricted Activity Per Cent	Bed Disability Per Cent	Restricted Activity	Bed Disability
Under 5	3.6	1.6	13.2	5.8
5–14	4.5	2.1	16.4	7.7
15–24	3.7	1.7	13.5	6.2
25–44	4.3	1.6	15.7	5.8
45–64	7.0	2.4	25.6	8.8
65+	13.0	4.5	47.3	16.3
All Ages	5.5	2.1	20.0	7.8

Source: U.S. National Health Survey Reports, 1958.

Permanent Disability

The number of persons permanently disabled by chronic disease varies sharply with age also. In the population as a whole the total disability rate is about 8 per 1,000; for severe and total disability the rate is 30 per 1,000. At ages 65 and over, severe and total disability cases are estimated at 150 per 1,000 (Table XIII).

TABLE XIII—Permanent Physical Disability—Canada, 1950–51

Age	All Severity Groups			Severe and Total Disability§		
	Number	Per Cent	Rate*	Number	Per Cent	Rate*
Under 25	139,000	15	22	37,000	9	6
25–44	238,000	25	59	88,000	21	20
45–64	317,000	33	128	136,000	32	55
65+	263,000	27	242	162,000	38	150
Total	957,000	100	68	423,000	100	30

*Rate per 1,000 population.
§99,000 were estimated to be totally disabled.

Medical Consultations

An individual consults his physician 300 times in his lifetime, five times per year at all ages for each sex. The demand for physicians' services also shows a strong age variation. At ages 65 and over the consultation rate is twice what it is at ages 15–44 years.

General Practitioner Case Load

Data on the clinical experience in general practice in England and Wales throw some light on the general practitioners' case and service load by age (S.O.M.A.P.S. No. 14, 1958); data for physicians' visits from the U.S. National Health Survey (1957) present a similar picture (Table XIV).

Except in childhood, females in general have higher rates than males, in respect of visits to general practitioners. Elderly patients (65 and over) have about twice as many consultations as children and young adults.

Hospital Utilization

There is a substantial increase in the average length of stay in hospital per case with increasing age, from age 50 on. For every day of hospital care

TABLE XIV—Consultation Rates

Age	England and Wales*		United States§	
	Males	Females	Males	Females
Under 5	320	309	5.0	4.6
5–14			3.6	3.2
15–24	247	370	3.4	6.3
25–44			3.5	6.2
45–64	395	412	3.8	5.8
65+	586	641	5.8	7.6
All Ages	339	408	3.9	5.5

*Per 100 population. §Per person.

required per 1,000 population at ages under 65 years, two days are required at ages 65 and over (Table XV).

TABLE XV—Hospital Utilization by Age

Age	Discharges per 1,000 Persons	Hospital Days per 1,000 Persons	Average Length of Stay (Days)
Under 15	53	294	5.5
15–24	72	615	8.6
25–44	83	706	8.5
45–64	98	1,187	12.0
65–74	119	1,700	14.3
75+	124	1,933	15.6
All Ages	79	757	9.6

Source: U.S. National Health Survey Reports.

The steep increase with age in medical calls, disabling illness, chronic disease, invalidity, and hospital bed requirements, clearly indicate that since the health problems of older ages are now relatively much more important, the medical, nursing and hospital demands to be met in the future will be, to say the least, sizable.

Every practising physician has felt the impact of the changes in age structure of the population in recent years. The weight of this impact is going to increase rather than diminish. The pattern of disease incidence and mortality has shifted to feature the conditions of the older ages and those of a more chronic character. Home and visiting nursing experience reflects this complete reversal of need.

While there are more cases of cancer, heart disease, et cetera, in the population today, a person aged 65 is no more likely to develop heart disease, hypertension, arthritis, diabetes, or cancer, than he was 30 or even 50 years ago. The situation is simply that the person is more likely, if he develops the disease, to survive to the age of 65.

Hospitalization

Trends in hospitalization have been steadily upward over the years. Approximately twenty per cent of the case load of general hospitals involves persons 65 years of age and over among whom cancer, diabetes, peripheral vascular disease, cerebral vascular accident, fractures of the hip or femur, prostatism, and senility predominate.

The facilities for caring for illnesses in the home have a decided influence

on the request for hospital admission. Congestion in urban areas with multiple families in one dwelling often makes it extremely difficult to care for even the most minor illnesses. Such difficulties are accentuated by the lack of available help within the home.

Mental Hospitals

The vast problem of mental disease is perhaps the most serious in the entire health field. The number of patients on the books of Ontario Mental Hospitals has increased from 10,390 in 1931 to 24,510 at the end of 1958, or 426 per 100,000 population.

The first admission rate for mental disease is low at ages under 15 years and changes very little from age 20 to age 65; in the age groups beyond 65 years, the admission rate is twice what it is in the younger age groups or at middle life.

The figures for the Province of Ontario show that although only 8.4% of the population is 65 years of age and over, 21% of the beds in the Ontario Mental Hospitals are occupied by persons at these ages; an additional 34% are in the age group 45–64 years. Of all first admissions, 22% are 65 years of age and over and of these, 85% are patients with senile psychoses or psychotics with cerebral arteriosclerosis. There are many more of these patients not in hospitals but for whom some additional provision is required.

Crippled Children

During 1958, a total of 1,246 infants were reported by physicians as born alive with an obvious congenital abnormality, 8.1 per 1,000 live births. Of these, 205 or 16.4% were premature. There were 1,506 abnormalities reported, 1,010 or 67.1% of which were congenital malformations; in addition there were 96 neoplasms, 220 cases of club foot and 57 cases of mongolism reported. Of 1,093 infants born alive in 1957 with a congenital abnormality, 359 or 32.8% died during their first year of life.

The Problem

The fact that the life span has been increased does not necessarily mean that the years that are added to our life span are healthy ones. Increased life expectancy increases the volume of morbidity. With children the more we reduce the hazards of life around the event of birth, the more we are faced with the survival of children with handicaps, with the problems of handicapped children who advance into later life. The same thing is true in the prolongation of life of persons with disease or other handicaps.

It is our pressing health problem to provide adequate health services, resources and facilities for the large and increasing numbers of the aged sick and for the children and adults suffering from disabling chronic conditions.

Although chronic diseases find the majority of their victims at older ages, the term "chronic sick" includes all age groups; infants and children with congenital heart disease, rheumatic heart disease, orthopaedic conditions; adults with tuberculosis, progressive nervous diseases; older men and women with arthritis, cancer, arteriosclerotic and cerebral vascular changes, and senile conditions of all types.

It has been said that the chronic aged sick have been inadequately cared for in the past and often receive scant attention. Certainly our few hospitals for chronic diseases are filled to overflowing and many patients in need of institutional care must wait until beds are available. In addition, there is a pressing necessity for a larger number of beds for the care of aged invalids and semi-invalids.

One of the most important single limiting factors today in relation to the care of the older citizens is the shortage of nursing staff. The potential source of nurses is the female population 17–20 years of age. The number of young women in this age group declined in absolute numbers from 1939–41 and did not begin to turn upward until ten years later, in 1953, nor get above the pre-war level until 1956. The ratio of females 17–20 years to total population declined steadily from 1939 and this proportion will probably not regain its pre-war level until 1963–65. These facts pinpoint the nurse-power problem today.

Discussion

The lengthening life span is the net result of many forces but the major gain has been made largely through reduction in infant mortality and the prolongation of life of persons with chronic disease. This has tended to increase, relatively and absolutely, the problem of congenital and other crippling conditions in children and the sub-standard or handicapped individuals at all ages in the population.

The chronic diseases, the diseases and conditions which attack middle aged and elderly people, are our major health problems today.

Chronic disease and disability is a function of age, but also, with the great reduction in infant mortality, the number of congenitally malformed and handicapped children become a more significant problem.

Physiological age is not synonymous with chronological age. A man's usefulness does not necessarily begin to diminish at age 45, nor terminate at age 65. Recognition of this fact is of great significance not only to the employers but to all health professions and to all community health and social workers.

The public health aspects of the problems of an aging population are of increasing importance; they call for planned action and conscious interest of all public health authorities.

The changes which have taken place in the demographic picture require suitable adjustments in the public health programs. More and more activities must be concentrated on the diseases and conditions which affect the older age groups. Public health administration must adapt its services and facilities to meet the health needs of the middle aged and older people, and the chronic disease problems generally.

It is imperative that we give due consideration to all practical measures which can be applied to the maintenance of the health of the aging, and to the postponement of the day when they will require a great deal of assistance, and eventually full bed-care. Where there has been deterioration in health, or sickness or injury, the problem becomes one of rehabilitation.

Increase in the average life span, because of its origin, brings greater emphasis on problems long out of focus—congenital abnormalities, chronic

disease, geriatrics. The future calls for: (*a*) a drive on those diseases which are specifically associated with older age; (*b*) increasing emphasis on medical research on congenital abnormalities, on the degenerative diseases and on the problems of old age; (*c*) provision of much needed hospital, home, and rehabilitation facilities for the chronic sick, the handicapped and the aged; (*d*) attempts to meet the demands for more comprehensive health care which are inescapable.

There are gaps in our health services, using "health services" in its most comprehensive sense; these must be and are being closed. Social medicine is developing solutions for the various defects in our system as it exists and as these changes occur, the health professions will have to adjust to fit it. This process will involve a greater integration of all health, hospital and welfare authorities in the public interest. Indeed, the close co-operation and collaboration of all health, hospital and welfare authorities is required to meet the present and the future need!

The objective of the combined efforts of all those concerned with the health and welfare of our people, governmental and voluntary, public and private, must be to "add life to years and not just years to life", so that it will not again be possible for anyone to say "You don't really live longer, it only seems longer".

Summary

The intensity and character of the need and the demand for health services is influenced to a large degree by demographic and social changes in our population. In common with other provinces of Canada and other countries, particularly in the Western World, the twentieth century has brought sharp changes in Ontario's population structure, in the expectation of life, and in the character of the major health problems in terms of needs for services and facilities.

Mortality from the infective diseases has declined dramatically; from 20% of all deaths in 1900 to only 1% today. Infant mortality rates have declined by 80% during the past 50 years from over 120 per 1,000 live births to 25 in 1957. Neonatal mortality has also declined substantially, but at a slower rate. At the beginning of this century, 57% of all deaths occurred at ages under 50 years; today almost 80% of all deaths occur among persons over 50 years of age. During the last 25 years, substantial reductions in mortality have occurred in all age groups, up to age 45. For males at ages 55–64 and 65 and over, however, very little improvement has been effected. Sex differences in mortality are a signal disturbing feature of our present mortality picture. Male mortality exceeds female mortality throughout the life span and the gap has widened sharply in the last 25 years. Life expectancy at birth has increased rapidly over the years to 67.8 years for males and 73.6 for females in 1956. There has been little improvement in life expectancy for the Canadian male at ages 50 and over during the last 25 years, perhaps 3 or 4 months at age 50 and at age 65 compared with 3 and 2 years respectively for females. Men have shared much less than women in this gain in life expectancy, especially at ages 50 and over.

Ontario's population is growing at the rate of about 200,000 or 3% per year. Persons 65 years of age and over comprise 8.4% of the total population and the number is increasing by 10,000 per year. The older segments of our population are growing in importance and require larger measures of health care. These available facts together make certain points clear: (*a*) there are more people alive today, both absolutely and relatively, at ages when the incidence of chronic disease is highest; (*b*) there will therefore be a greater absolute number of persons who develop or who are alive with chronic disease; and (*c*) the morbidity and mortality from chronic disease form a greater proportion of total morbidity and mortality now than formerly.

Chronic disease will command increasing interest in the future and the relative and the absolute volume of service to be provided by all health personnel and facilities may be expected to increase substantially. Increase in the average life span, because of its origin, brings greater emphasis on problems long out of focus—chronic disease, geriatrics. Gaps in our present system must be met, a process which will involve a greater integration of health and welfare activities in the public interest. The fact that the life span has been increased does not necessarily mean that the years that are added to our life span are healthy ones. The more we reduce the hazards of life around the event of birth, the more we are faced with the survival of children with handicaps, with the problems of handicapped children who advance into later life; the same thing is true in the prolongation of life of persons with diseases or other handicaps. Social medicine is developing solutions for the various defects or gaps in our system as it exists and, as these changes occur, the health professions will have to adjust to fit in. The problem before health personnel, governmental or voluntary, private or public, is to add life to years and not just years to life! The close co-operation and collaboration of health, hospital and welfare authorities is required to meet the present and future needs.

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RÉSUMÉ

La quantité et la qualité des services de santé sont considérablement influencées par la variation sociale et démographique. Semblablement aux autres provinces canadiennes et à certains pays, notablement du monde occidental, la population de la province de l'Ontario, au cours de ce vingtième siècle, a enregistré une profonde modification de sa structure, de son taux de survie probable, et de ses besoins de services sanitaires.

La mortalité infectieuse a décru considérablement: alors qu'elle représentait 20% du total des décès, elle n'en est plus que 1%. Le taux de la mortalité infantile a baissé de 80% au cours des dernières cinquante années, passant de 120.0 par 1,000 naissances vivantes à tout au plus 25.0. La mortalité néonatale, bien que plus lentement, marque aussi un déclin substantiel. Au début de ce siècle, 57% des personnes qui décédaient n'avaient pas atteint 50 ans; de nos jours, presque

80% des décès surviennent au- delà de cette limite. C'est surtout au cours des derniers vingt-cinq ans que des diminutions substantielles ont été enregistrées, principalement parmi la population de moins de quarante-cinq ans. Par contre, peu d'amélioration est marquée par la population masculine dans les groupes d'âge de plus de 55 ans, et la répartition des décès en relation des sexes constitue un véritable indice révélateur de notre mortalité actuelle.

La mortalité masculine excède considérablement la mortalité féminine, sur toute la durée de la vie, et la différence s'accentue continuellement. A la naissance, la survie probable de notre population s'est accrue, mais seulement à 67.8 années pour l'homme contre 73.6 années pour la femme Au cours des dernières vingt-cinq années, la survie de l'homme parvenu à la cinquantaine, et au-delà, ne s'est accrue que de deux ou trois mois, en comparaison de deux ou trois ans pour la femme. L'homme a donc beaucoup moins que la femme profité de l'accroissement de cette survie probable, surtout une fois parvenu à la moitié de sa vie.

La population de l'Ontario s'accroît de quelque 200,000 âmes annuellement, soit de 3%. Le groupe des personnes de 65 ans et plus correspond à 8.4% du total et leur nombre s'accroît de 10,000 chaque année. Ce secteur de notre population s'accroît aussi en importance, parce qu'il requiert plus d'attention. Tous ces considérants établissent bien nettement certains faits: (a) qu'il y a de nos jours beaucoup plus de citoyens, quantitativement et relativement, aux âges où l'incidence des affections chroniques est plus élevée; (b) qu'en conséquence, un plus grand nombre d'individus présentent de telles affections et continuent à vivre tout en requérant des traitements appropriés; (c), finalement, que la morbidité et la mortalité imputables à ces affections se trouvent à constituer une proportion plus forte de la morbidité et de la mortalité totales.

Ces maladies du vieillissement deviennent donc d'un intérêt primordial et il faut prévoir que la somme des services de santé doive être accrue considérablement. La prolongation de la durée de survie fait ressortir avec insistance un problème jusqu'ici plutôt négligé, celui de la gérontologie. La déficience de nos services en rapport avec ce problème doit être rectifiée et, dans l'intérêt du public même, une intégration des services sanitaires et sociaux s'impose.

L'augmentation de la durée de la vie ne signifie pas nécessairement que les années supplémentaires acquises soient des années de santé parfaite. D'avoir réduit la mortalité néonatale et infantile signifie tout simplement que nous sommes confrontés par plus d'enfants handicappés qui ne sont pas décédés; la situation est semblable à celle de l'autre extrême de la vie avec la présence de plus de cas chroniques. La médecine sociale doit chercher la solution aux différents défauts ou lacunes des organismes actuels; les services de santé devront s'intégrer dans ce programme social. De la part des organisations d'hygiène publique, gouvernementales ou volontaires, privées ou publiques, le programme doit s'enfforcer d'ajouter de la vie aux années, pas seulement des années à la vie. Cet objectif ne sera atteint que par la collaboration parfaite de tous, dans les secteurs de la santé, du bien-être, et de l'hospitalisation. (*Trad.: Dr P. Parrot*).

Public Health Engineering in Northern Canada

STANLEY S. COPP[1]

CANADIANS are becoming more familiar with the north and south arctic regions as a result of recent arctic and polar explorations, the installation of remote weather stations, and the erection of defence warning networks. These exploits and natural industrial development mean that a larger number of persons are living under arctic and sub-arctic conditions. They also mean that northern Canada is developing, many settlements are growing, and new settlements are arising. With the increase in the native population and the extension of welfare services, governmental administrative personnel has increased and attendant private enterprise has further added to the population increase.

With the growth of the larger settlements, public utilities, particularly water supplies, have become necessary and have been demanded. Engineering problems in the design of these services have not been great, but new techniques have had to be devised to overcome unfavourable climatic and soil conditions.

For the purposes of this paper, "northern Canada" is considered as the western portion of the Northwest Territories and the Yukon. A large part of this area is drained by the Mackenzie River, and nearly all of the population of the Territories is found along this river.

The Canadian north is sub-arctic and arctic, the arctic being a geographical region in which the mean temperature for the warmest month is less than 50°F. The line of separation between arctic and sub-arctic is roughly the northerly limit of tree growth. Extreme winter temperatures along the arctic ocean are little different from those on the Canadian prairies, but the much longer winters and very short summers result in permafrost. Permafrost is permanently frozen ground or rock, and may reach a depth of 1,200 ft. on the arctic coast. As the ice content of such ground is often very high in arctic regions, the design of building foundations and water and sewer lines differs from the more temperate regions, and the cost of these installations is always much higher.

Water Supply

Sporadic waterborne outbreaks of typhoid and paratyphoid fevers occur every few years and gastro-enteric upsets are prevalent among the natives each spring, presumably largely due to the increased bacterial content of surface water. Provision of a suitable water supply is paramount in any health program, but the cost of installation of an all-weather water system for northern settlements is prohibitive without government assistance.

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WATER SUPPLY SOURCES

Suitable surface sources for individual dwellings and institutions are often difficult to obtain without water treatment, and ground water is generally of a poor quality. Precipitation is low, varying from 5 to 15 in. per year. Average annual snowfall ranges from 40 to 80 in.

Surface water is the most common supply source in the north. Ice cover may reach 7 feet, so the deeper lakes or rivers must be used for winter supplies. Lakes are numerous in much of the arctic, for although the total annual precipitation is low, the lake beds are water-tight because of permafrost or rock, and evaporation is small because of low temperatures and ice cover. In winter, dissolved and suspended solids are occluded during ice crystal formation so that in the shallow lakes total solids of the water below lake ice increase appreciably, making the water unfit for drinking. Smaller streams dry up in winter, or freeze from the bottom and top and may become solid ice.

Where a lake is deep near the shore it might be possible to obtain warmer water in winter below the thermocline. Theoretically, water at 39.3°F., at which it has its maximum density, should be obtainable if the lake is sufficiently deep for stratification to occur.

At most institutions, river water is pumped for domestic purposes and melted ice used for drinking. River vessels have automatic pumping systems which may draw the contaminated river water, but these vessels will contaminate the river further with discharges from their flush toilets and sinks.

Lakes in the Mackenzie Delta are commonly flooded during the spring break-up and thus become turbid for a few weeks.

Well sources in permafrost areas are possible. A well at Mile 1095 on the Alaska Highway penetrates 180 feet of permafrost and is providing water of satisfactory quantity and chemical quality. This well has a steel casing of 6 in. diameter. By passing an electric current through a loop of copper wire extending to the bottom, heat is provided during the winter and as required to prevent freezing in summer. Shallow wells at Dawson City also supply a large quantity of water of good quality, and a 30 ft. well at Sawmill Bay on Great Bear Lake penetrated 10 ft. of permafrost to produce acceptable water with 300 ppm. total solids. Most shallow wells which extend into the "talik", or area between the seasonably frozen ground and the permafrost, are subject to contamination and produce water with total solids up to 3500 ppm or more and iron up to 30 ppm or more. Muller (1) has described water supply problems and related data in some detail, although many new designs have developed since his book was published in 1945.

Miscellaneous sources of water include snow and ice melting, distillation of sea water, or the use of sea water near shore diluted with melting ice floes, melted snow or surface run-off. A common source of supply for drinking water in individual homes and institutions is melted ice.

Small quantities of water may be obtained in places in the tundra regions by removing the moss and dipping the water above the frozen ground. Clear, cool water may be obtained in this manner in summer.

WATER TREATMENT

Generally, in arctic and sub-arctic regions water treatment is similar to that in more southerly regions. The slow speed of the reactions of chemicals

employed in water treatment is more costly because the surface and ground waters are cold most of the year.

Chlorination is all that is required for certain river supplies in winter and for most lake supplies in summer and winter, but because of the lower rate of kill of bacteria at near-freezing temperatures, contact time between the chlorine and water should be increased from 15 min. to 30 min. Chlorine has been provided at many localities.

Conventional treatment plants consisting of chemical mixing, coagulation, settling and sand filtration must be located indoors. Because of the increasing viscosity of water with decreasing temperature, settling times must be extended and the time required at 60°F must be almost doubled at 32°F. Condensation within the plant may be a problem, and one plant in Alaska has installed dehumidifying equipment.

Diatomaceous earth filtration has provided satisfactory treatment for lake water used in the Aklavik summer water system. The lake is slightly turbid due to algae and some silt, but these are readily removed. A large percentage of bacteria is removed in these filters and in the event of failure of the chlorination equipment, a certain amount of protection is still provided.

Porous stone filters are used extensively aboard river vessels to make river waters acceptable for drinking and culinary purposes. A large percentage reduction in coliform organisms is also obtained with these filters.

Simple gravity sand filters can also be constructed for home use to remove turbidity, and chlorine tablets or household bleach are convenient for disinfection.

Alum can be added to water in household barrels, stirred and allowed to settle to obtain clearer water which can then be used with or without filtration.

WATER DISTRIBUTION

Many different types of above-ground and sub-surface distribution systems have been designed to prevent water lines from freezing. Most have been successful, but all have been costly to install and operate.

Tank trucking the water from source to user is an ancient method of community distribution. A suitable source is not always available and the truck operator seldom has enough capital or technical ability to install and operate a treatment plant.

Summer system. At Aklavik, a summer water system has filled a particular need. The river here is muddy during the summer and is contaminated by a sewer outfall at the upper end of the settlement. The lakes to the rear of the settlement are contaminated by surface runoff and are slightly turbid. Water drawn from one of these lakes passes through a small treatment plant which provides diatomaceous earth filtration and chlorination, and thence through a distribution system laid above ground with standpipes and take-offs throughout the settlement. It operates from about June 1 to September 20, and similar systems could be installed at many other settlements for protection when rivers and lakes are turbid and contaminated.

Pre-heating and bleeding at dead ends of distribution systems are used in the water system at Fort Smith, where water pre-heated to 40°F at the plant is bled through orifices at two dead ends. At Dawson City, the water is pre-heated to 40°F and bled to the sewer at each house, and at dead ends. At

Whitehorse, the new system provides for the passage of river water through a heat exchanger employing warmer well water as a source of heat.

Pre-heating and recirculating. This type of sub-surface system is employed at Yellowknife and Flin Flon and consists of dual mains and dual service connections. It is quite flexible, for the mains can be laid at any depth or on the ground surface in utilidors.

Utilidors. Laying water and sewer lines in a common, insulated box or "utilidor" with a steam line and, where practical, a steam-condensate line, is the most common distribution system presently in use at mines and military bases. The utilidor is laid above ground in most places, particularly where there is solid rock such as at the mines at Yellowknife, but may be below the surface or heaped over with fill, mine muck, etc.

Fairbanks, Alaska, has a new single-main recirculation system laid at a depth of six feet with dual service connections. A velocity of three feet per second maintained in the main creates a sufficient velocity in the service connections to prevent freezing.

Miscellaneous systems. There are many other variations of water distribution systems, such as electrically heated service lines. In the Yukon, the Canadian Army has laid lines through the heated basements of houses and buildings and then between buildings through conduit at a depth of $1\frac{1}{2}$ feet. This has worked satisfactorily as the buildings are always heated.

Sewage Disposal

One of the main problems of sanitation in the north is to dispose of sewage where it will not contaminate the water supplies of the natives. This is difficult to accomplish for the natives will usually take the nearest source of water supply if it is relatively clear water, and generally they will not boil water for drinking. Natives do not always live in the settlements but pitch their tents on the fringes, often downstream from the settlements where the river is most contaminated. Sub-surface sewage disposal is not usually possible in the tight arctic silts and frozen ground of high ice content.

INDIVIDUAL SYSTEMS

The majority of dwellings in the arctic are not connected to community sewerage systems. The Eskimos and northern Indians usually disperse their sewage indiscriminately, for educating the natives in sanitation is a very slow process.

Bucket Toilet. This is one of the most common and most simple systems and operates fairly satisfactorily if the toilet is vented correctly and kept clean. Locating the bucket in the home affords protection from the weather.

Pit Privy. This system is also common in arctic regions but often is not satisfactory. Pits are difficult to dig and they fill with ground water in the summer, which freezes in the winter.

Chemical Toilet. These are used in some northerly institutions and are operating fairly satisfactorily. They consist of one or more seats located directly over a large steel tank, with the tank situated in the basement. The tank contains caustic soda and the contents of the tank are stirred, often by

a paddle attached to the seat cover or door. The tank contents may be pumped out or drained by gravity through the bottom to a river, pond, pit, etc. This is probably the most suitable method of collection and disposal next to water-carried sewage and if properly operated the health hazard of sewage disposal is greatly diminished.

Pail-a-day toilets are similar in construction to chemical toilets. No chemical is used, but a pail of water is poured in each day.

Water-carried sewerage systems can operate satisfactorily in arctic regions even for individual homes, but installation and maintenance costs of the water and sewerage systems are very high. It is expensive to overcome unstable soil conditions and provide sufficient heat to water and sewer lines to prevent freezing.

Cesspits may operate if the ground is sufficiently porous. They are apparently more suitable than a tile disposal field for the heat is concentrated at one location, and an immersion heater may readily provide additional heat. Experimental, sub-surface disposal fields have operated successfully at Fairbanks, Alaska, in the sub-arctic.

Experiments have been carried out in Alaska for the last two years with the Sanitoi system. It is too expensive, however, for the average individual home and evidently mechanical breakdowns are frequent. It operates best at 70°F., so additional heated space is required. It evidently can cause odours.

Incineration of sewage is practical under special conditions and complete units can be purchased. The power source is presently electricity but units utilizing other sources such as natural, butane, or propane gas and diesel fuel oil have been designed.

Community sewer systems have been installed at Dawson City, Whitehorse, Yellowknife, and Inuvik, and others are being installed. The most important factors in sewer design in cold climates are depth of cover, volume of flow, and sewer grade. Ground temperatures have been recorded around sewer pipes in the Yellowknife system (2). Under a gravelled, plowed road in winter at Yellowknife the temperature of the ground reaches a low temperature of 20°F. at 4 ft. depth, 26°F. at 7 ft.

SEWAGE TREATMENT

Conventional treatment plants operate satisfactorily in the arctic, but foundation problems may be difficult to overcome because of the large bodies of heat and the depths necessary for settling tanks. Settling of particles is slower and more heat will be required for sludge digestion.

Septic tanks operate successfully in the arctic and sub-arctic. The tank and cesspit may be heated with thermostatically-controlled, electrical immersion heaters.

Sewage lagoons designed as such are being installed in the Canadian far north and it is believed that they should operate satisfactorily. A temporary lagoon has been operating at Aklavik, and others are being designed. The high degree of solubility of oxygen in cold water and the slow digestion rate of sewage at low temperatures should maintain aerobic conditions in summer with conventional design criteria. Anaerobic conditions would probably prevail in winter as is common with lagoons on the Canadian prairies.

Two sewage lagoons have been constructed in Alaska and both are of conventional design. One at Fort Yukon serves a large day school and small residential school. Sewage enters the lagoon through the bottom. The fine silt ground does not retain the sewage and some 2000 gals. of water are added per day to maintain the water level.

The other lagoon is at the Alpine Inn 70 miles from Anchorage and serves a roadhouse, trailer camp and a few homes. It is also difficult to keep the water level constant as there is considerable leaching into the gravel sub-soil.

Insulated sewer outfalls operate without added heat. At one Dew Line site sewage at about 65°F. is pumped through 500 ft. of uninsulated 3-in. aluminum pipe.

Garbage and Refuse Disposal

Garbage collection is difficult to organize, particularly among the native population. The winter's accumulation of trash and garbage is laid bare with the melting of the snow and a spring clean-up is usually organized by the local administration or the R.C.M.P.

Garbage Disposal. When a nuisance ground is organized it is not always possible to locate a suitable bank over which to discharge the wastes, and it becomes strewn indiscriminately over a large area. If the road to it is impassable at certain times of the year conditions are much worse for night soil and refuse may be dumped along the access road. Spraying a dump with oil and burning helps control insects and odours.

Garbage and night soil is commonly placed on the river, lake, or sea ice to be carried away. It is not always carried away, however, and may create a nuisance condition.

Because trichinosis is so prevalent among humans and animals in other arctic regions, garbage disposal may become a more important public health problem.

Miscellaneous Problems

Mosquito Control in the Canadian far north is important from a health standpoint even though it has not been proved that mosquitoes transmit infectious organisms. Studies of mosquito-borne encephalitis are progressing in Saskatchewan. In Sweden, *Aedes cinereus*, a mosquito abundant in Alaska as well, was recently shown to spread tularemia. Also in subarctic Siberia, Russians have demonstrated that mosquitoes transmit malaria and Japanese B encephalitis.

Trichinosis can be spread through improper garbage disposal, although there is apparently no trichinosis in Northern Canada at present. Clark (3) mentions outbreaks of trichinosis among natives (Alaskan) who apparently contracted the disease from eating non-carnivorous animals such as seal and walrus. It is therefore important not to eat arctic mammals without thorough cooking.

River Pollution has not yet reached any proportion. The refinery at Norman Wells recently appears to be creating a slight nuisance with oil wastes. The plywood plant constructed at Fort Smith should create no nuisance conditions. Fish packing operations are on a small scale and scattered. Sewage enters the

rivers and lakes at a few points and is contaminating water supplies, but there is no significant depletion of dissolved oxygen in the rivers.

Summary

Public health engineering problems in northern Canada are being solved only slowly because of lack of basic research and gathering of data on existing utility systems, apparently due to an indifference toward this branch of engineering. A research program is now being undertaken by the Department of National Health and Welfare to develop economical household, institutional and community water and sewerage systems, to study human environment engineering, and to gather basic data. This involves at present the employment of a full-time public health research engineer.

The clue to the economical installation of community water and sewerage systems is to be able to bury them in non frost-susceptible soil. This is almost impossible to find, for either rock or moisture-laden silts are nearly always encountered. If such ground can be found then the addition of a slight amount of heat to the ground causes the permafrost to recede and conditions are quite similar to those of the more temperate prairie regions of Canada.

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Résumé

Les problèmes de génie sanitaire du Grand Nord Canadien sont lents à résoudre surtout à cause de l'absence de recherches et du manque de données essentielles sur les services publics existants; cet état de choses est apparemment dû à l'indifférence que l'on professe à l'égard de cette spécialité du génie.

Le Ministère de la Santé nationale et du Bien-être social vient de lancer un programme de recherches pour mettre au point des systèmes d'égouts économiques pour les maisons privées, les institutions et les municipalités, étudier les aspects techniques du milieu et recueillir les données utiles à la solution de tous ces problèmes. Ces travaux s'effectuent grâce aux services à temps complet d'un ingénieur sanitaire spécialisé en recherches.

Le principal problème à résoudre dans l'installation des systèmes de distribution d'eau et d'égouts dans les municipalités du grand Nord, est de pouvoir enfouir ces services dans un sol non exposé à geler; malheureusement, ceci est très rare car le plus souvent les terrains que l'on rencontre contiennent du roc ou des terres alluvionnaires saturées d'eau. Si toutefois on peut trouver un sol approprié, alors l'application d'une certaine quantité de chaleur à ce sol empêche le gel perpétuel (permafrost) et les conditions deviennent presque semblables à celles que l'on trouve dans les régions plus tempérées des prairies canadiennes.

(Trad.: B. Beaupré).

The Public Health Nursing Assistant in the Toronto Department of Public Health[1]

JEAN LEASK,[2] M.A.

IN RECENT years, much has been written and spoken concerning the shortage of professional nursing personnel in the hospital, industrial and public health fields. At the same time, many new programs have been initiated with opportunities for the nurse to make her particular contribution. I believe that nurses are willing to accept these challenges and are interested in taking their part in new programs. We cannot, however, expect them to be unreservedly enthusiastic if something is always added but nothing is taken away. The tremendous increase in facilities for hospitalization and the growth of health programs in the community, without a corresponding increase in the number of nurses available, have contributed to the need for thoughtful consideration of how these varied demands for nursing personnel can be met.

The public health nurse with her knowledge of preventive medicine, her skills of observation, teaching and counselling is a key person in the public health team. Her daily contact with individuals and groups in homes, schools, and child health centers has made her an interpreter, not only of her own program but also of those of allied health workers. In some instances she has assumed, or has had thrust upon her, the role of co-ordinating the various surveys and special services which have become part of an official health program. This is particularly true in schools. She has also been assigned the responsibility for much of the detail of organization in immunization programs, child health centers and other projects. This tendency of the nurse to find herself with "more than she bargained for" has been referred to by one of our nursing leaders as the "fatal availability of the nurse"—and public health nurses are no exception.

To be realistic, it is recognized that someone must prepare children for physical examinations, examine for pediculosis, do routine vision tests, send home consents, set up child health centers, etc., if the program is to be efficient. Because these are tangible and immediately necessary activities they tend to assume major importance and leave little time for the teaching and counselling functions for which the nurse is prepared. It is not sufficient, or indeed, correct to dismiss these activities as "non-nursing". Thought has been given in recent years to the employment of an auxiliary worker to whom the more routine duties and simple nursing procedures could be delegated and who would work under the supervision and direction of the public health nurse. The material

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which I have been asked to present relates to the experience of the Nursing Division of the Toronto Department of Public Health in the employment of this type of worker whom we now call "public health nursing assistants".

In 1946, the Toronto Department of Public Health employed auxiliary workers to assist the public health nurses with the program for the control of pediculosis in certain districts of the city. At that time a small group of women called "communicable disease matrons" were taken on the staff of the Nursing Division. No special qualifications or preparation were required and necessary instruction was given on the job. Under the direction of the public health nurse they examined children's heads for pediculosis, excluded them from school when necessary and, at the request of the nurse, visited the children's homes to show the mother how to do a treatment. In some instances, as when parents were both working or when no co-operation was received from the parents, treatments were done in school with the parents' signed consent.

Although employed to assist in the control of pediculosis, it became apparent that there were other areas of work in which the nurse needed assistance and additional duties were assigned on an individual basis according to the abilities of the matron. In 1951, in order to continue the assessment of the types of duty which could be assigned to a person less highly prepared than a public health nurse, three workers were employed and used on a project basis in one district office. All of these workers had some preparation, either clerical or nursing.

In 1954, as a result of the experience with these two groups, it was decided to use this type of worker throughout the city. At this time, after consultation with the Director of the Nursing Branch of the Provincial Department of Health, a number of certified nursing assistants were included in this group on an experimental basis. The entire group became entitled "public health nursing assistants".

Present Selection

Twenty-four public health nursing assistants are now employed, three being assigned to each of the eight district offices, a ratio of one public health nursing assistant to every four or five public health nurses. The group includes persons with various types of preparation but all new employees in this group are required to be certified nursing assistants since the certified nursing assistant has fitted into the district program more readily than those with no preparation or those with clerical preparation. This may be due to the fact that she has had a ten months' course in simple nursing techniques, understands the confidential aspects of the work, has had some training and experience in dealing with people and is accustomed to working under the direction of the registered nurse. Although registered nurses have enquired about these positions, it is our opinion that this is not the type of work which should be done by persons with professional preparation. A few registered nurses are employed on a part-time basis for immunization centers where their preparation is considered necessary for the job to be performed.

Public health nursing assistants have the same personnel policies as any other civic employee. They carry a bag supplied by the Department which contains equipment needed in the pediculosis control program. In schools and

child health centers they wear aqua-coloured laboratory coats supplied by the Department.

Planning the Program

In the use of public health nursing assistants the following points are of utmost importance. The assistant must understand the type of work which will be assigned to her and she must be willing to accept its limitations and her relationship to the public health nurse. The public health nurse must understand the function of the assistant and be willing to accept responsibility for her supervision and direction. Physicians, principals, teachers and other co-workers must be fully informed of the functions of both the nurse and the assistant. The introduction of the public health nursing assistant should be carefully planned and the program provide her with an opportunity to give continuity of service and to receive the satisfaction of the completion of an assignment.

Interpretation of the nature of her work is made to the public health nursing assistant at the pre-employment interview and as necessary by the supervisor and public health nurse. The program was discussed with the public health nursing group before it started. The program is explained in detail to all new staff nurses shortly after their appointment and a nursing assistant is not assigned to a new nurse until she has had this conference. In schools this gives the nurse an opportunity to become acquainted with the program and the personnel and does not place her in the position of directing someone who is more familiar with the situation than herself.

Interpretation to co-workers, particularly to principals and teachers in school, is extremely important and must be continuous. In the beginning the interpretation to principals was done by the district supervisor and is now made by her to new principals not aware of the program. The public health nurse assigned to the school uses staff meetings and individual contacts to explain the function of the assistant to the teachers.

The introduction of the new public health nursing assistant is planned by the educational consultant, the supervisor of the district to which she is assigned and the public health nurse who will be introducing her. For the first two weeks the assistant is assigned to one nurse and accompanies her in the school, child health center and the home. While it is recognized that her work in the home is limited to pediculosis visiting, it is felt that she should have some knowledge of the program being carried by the nurse. During this introductory period she has conferences with the educational consultant, demonstrations of techniques such as thermometer reading, first aid, vision testing, and opportunity to practise these under supervision. Following this period the assistant works gradually into her full assignment of assisting four or five nurses. Plans for delegation of activities are then made by the supervisor and nurses concerned and, while she may be working with a different nurse every day, the plan from week to week does not usually change.

Assignment of Activities

The public health nursing assistant is employed to assist the public health nurse. Her activities are selected from those of the public health nurse and on

the basis of suitability for a non-professional worker. The selection is made by the public health nurse in consultation with her supervisor and may vary from school to school or in the various child health centers. While the public health nurse takes final responsibility for the program, the assistant is responsible for satisfactory completion of the work assigned.

In Toronto, public health nursing service is given in 142 schools including public, separate and secondary. The time of the public health nurse varies with the population and needs of the school from two half-days a week to full-time service. The assistant is assigned according to the need for her services and in some instances very limited or no time is required. Although a considerable amount of her service in school is given at the same time as that of the nurse she may remain in the school for an afternoon or return at a time when the nurse is not present. This type of assignment is usually given to the experienced nursing assistant. At all times she carries out only the activities delegated by the nurse and when alone in the school does not assume the responsibility for first aid treatment or illness of pupils. These are handled by the school as they would be in the nurse's absence. The assistant does not exclude pupils from school except for pediculosis. If emergency situations arise when the nurse is not present the assistant calls the district supervisor for advice. Her activities include taking temperatures and doing minor first aid treatments at the request of the nurse, examination and treatment for pediculosis, weighing and measuring children and routine vision tests to screen for abnormalities. She prepares children for physical examination, assists with immunization programs, pre-school registration or similar surveys of children and is responsible for the general tidiness of the health service room. She cares for the first aid tray and thermometers, cleans cupboards, orders and checks supplies and laundry. She also files records, copies reports and results of mental examinations, immunizations etc. on school health records and prepares health records for new pupils.

In some schools the pediculosis control program is of major importance, in others it may be non-existent. In vision testing when an abnormality is found by the assistant, the pupil is retested by the nurse before the suspected defect is referred to the school physician.

In child health centers and immunization centers a similar pattern for assigning duties to the assistant is followed, this time by the charge nurse in consultation with the district supervisor. Service is given in 30 child health centers and 4 pre-school immunization centers. By the end of 1959 we expect this will be increased to 32 child health centers and 7 immunization centers. The public health nursing assistant attends one or more centers each week. Here her activities may include the setting up and cleaning up of the center, cleaning needles and equipment, and copying and filing reports. She also may weigh infants, supervise play tables and look after the appointment desk. Since certified nursing assistants do not have preparation to carry out aseptic technique such as sterilizing equipment we have not given them the responsibility associated with this.

The public health nursing assistants' service in the home is limited to those visits made at the request of the public health nurse for the purpose of pedi-

culosis control. The need for this varies widely throughout the city. In some districts one or two afternoons are set aside for each assistant for this activity. Usually the assistant pays the necessary visits to the homes of the pupils from the schools she is serving.

Supervision and Direction

The day-to-day supervision and direction of the public health nursing assistant is carried out by the staff public health nurse. The district supervisor or her assistant is responsible for the overall supervision of this worker including observation of her work in the field, regular conference periods and the writing of the evaluation reports. The compilation of the material for the evaluation report is a joint responsibility of the supervisor and the staff nurse.

Public health nursing assistants do not attend all staff conferences but are brought in when the subject for discussion affects their program. For example, when plans were being made for poliomyelitis vaccine to be given to school children they were included in the discussions. The district supervisor also has individual and group conferences with the assistants assigned to her office regarding their work. Their suggestions are sought and many helpful changes have been made as a result.

Difficulties

It would be foolish to say that no difficulties have arisen in the development of this program or that we have solved all our problems. In the beginning there were the usual reservations regarding a new program and reluctance on the part of the public health nurse to delegate areas of her program. Now, a public health nurse almost feels discriminated against if she is not assigned an assistant. The direction and supervision of this type of worker is a new role for the public health nurse, especially for those of us who were prepared before nursing assistants were part of the nursing team. For the new graduate who is accustomed to working with the assistant in hospitals the transition to a similar situation in the public health field is perhaps a little easier.

One of the main problems has been to find suitable activities for this worker during the periods when school is closed, especially the two summer months. We have tried to solve this by having the assistants relieve in child health centers in any part of the city, thus using most of their afternoon time. They also inspect children for pediculosis at the screening exminations done for children going to certain camps. They assist at the pre-school medical examinations in the district office and also with other district office duties such as answering the telephone, sorting cupboards, etc. We arrange that in a district office only one assistant is on holidays at any one time thus making a more even distribution throughout the summer for child health centers and camp examinations.

There are other aspects of the program which need to be examined. One is the possibility of the employment of this type of worker interfering with the recruitment and use of volunteers. For many years volunteers have not only given an important service in public health programs but have also given us an opportunity to interpret our work to interested citizens. It would be most unfortunate if the employment of auxiliary workers resulted in the activities

which can be done by volunteers being gradually taken over by the assistants. Another aspect is consideration of the need for increasing the number of public health nursing assistants. Increases in school populations and in child health centers will necessitate additional service. Further analysis of the public health nursing program may also indicate other activities which could be delegated to a non-professional worker.

Summary

A small group of public health nursing assistants is employed by the Nursing Division of the Toronto Department of Public Health to assist the public health nurse. The activities of the nursing assistant are selected from those of the public health nurse on the basis of suitability for a non-professional person. After several years of experimentation with varying types of personnel, the certified nursing assistant is considered to have the most suitable preparation for the program of this Department.

Since the nursing assistant works under the direction and supervision of the public health nurse, we believe it is essential that both types of worker are responsible to the same administration. The nursing assistant cannot take the place of the public health nurse. For this reason it is important that her function is interpreted to nursing personnel, physicians, teachers and other allied workers and that the assistant herself understand the limitations of her program. Careful planning for her introduction will contribute to the success of the nursing assistant as an addition to the public health nursing team.

HOTEL RESERVATIONS

for the

ANNUAL MEETING IN HALIFAX

May 31–June 2

A strike of the Plasterer's Union in Halifax has delayed the completion of remodelling of the Nova Scotian Hotel and this has resulted in curtailment of bedroom accommodation. There will be no difficulty in providing accommodation for all guests in the various hotels and the Housing Committee assures everyone of accommodation.

In the Nova Scotian Hotel double rooms will be available and a limited number of single rooms at the Lord Nelson Hotel. For those travelling by car the motels in the Halifax area provide fine accommodation.

Members are asked to send their reservation requests to:

Mr. Ralph E. J. Ricketts
Chairman, Housing Committee
Suite 21
353 Bayers Road
Halifax, N.S.

The Incidence of Q Fever Among Dairy Herds in Western Ontario

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Q FEVER is a rickettsial disease of man and certain wild and domestic animals first reported in 1937 by Derrick in Australia (1). Since that time Q fever has progressed from the realm of medical obscurity to recognition as being of public health significance in 51 countries on five continents.

On the North American continent Hesdorfer and Duffalo (2) in 1941, reported from Montana the first naturally occurring case of Q fever. The first recognized outbreak occurred in 1946 and involved a number of packing-house workers in Amarillo, Texas (3). A second explosive outbreak occurred in a Chicago packing plant during the same year (4). The first reported occurrence of endemic Q fever in the United States was made by Young (5), when a number of human cases were diagnosed in California. Recently, a report by Pavilanis *et al.* (6) described an epidemic of Q fever at Princeville, Quebec, involving workers at a slaughterhouse.

Q Fever in Animals

Since *Coxiella burneti* was isolated from several species of ticks, early investigators first believed that the tick, particularly *Dermacentor andersoni* was the natural method of transmission of Q fever. Pavilanis *et al.* (6) report that the sheep ked *Melophagus ovinus* is one of the vectors of Q fever in the province of Quebec. In Australia, Derrick (8) postulates an infection transmission cycle involving infected ticks, bandicoots and cattle. Man is thought to become infected by tick bite or more likely by contact with infectious tick faeces in the form of dust. Huebner *et al.* (9) report that dairy cattle may serve as a potential reservoir of human infection as they were able to isolate rickettsiae from the milk of infected dairy cows.

It has now been established that the domestic ruminant species—cattle, sheep and goats—are naturally susceptible to Q fever infection (10, 11). The foetal membranes and post-parturient vaginal discharge of Q fever-infected domestic ruminants are highly contaminated with *C. burneti* (12). Infectious material may serve to contaminate the environment as demonstrated by air-sampling studies in which viable rickettsiae have been recovered from air in and about barns and dairies known to harbour infected animals (13). The ability of this organism to withstand desiccation facilitates environmental contamination by means of rickettsiae-laden dust.

Available information reveals that Q fever infection in the domestic ruminant species is completely asymptomatic. Female animals are presumed to be immune until sexually mature. The female reproductive organs appear to be the focus of infection. Many animals have been found to be susceptible to experimental infection including the field mouse, porcupine, chipmunk and wild rabbit (14). Q fever has been reported to occur naturally in dogs having contact with infected sheep (15).

From available data, one can state that cattle, sheep and goats constitute the main domestic animal reservoir of infection for man. The mode of transmission is not com-

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pletely understood. The role of ticks and other arthropods as well as rodents and wild life as vectors of Q fever presents a problem in the spread of this disease. Direct contact with infectious material and indirect contact with contaminated dust may prove to be the most common method of animal and human infection. In the study (6) of an epidemic of Q fever in Quebec, it was determined that 9.9% of the bovine population examined showed evidence of infection with Q fever. Moynihan *et al.* (16) reported negative findings in a survey to determine the presence of Q fever among cattle in the Fraser Valley. As no survey had been made among cattle in Ontario and with reports of the disease in an adjacent province, it was decided to conduct a survey for Q fever among dairy cattle in this province. The area surveyed consisted chiefly of the following counties: Wellington, Waterloo, Brant, Wentworth and Haldimand. In all, 200 dairy herds were examined involving approximately 5,000 cows. This group of animals served as a nucleus to determine the status with respect to Q fever of dairy cattle in western Ontario.

Materials and Methods

Pooled herd milk samples were collected at the farm from each of the 200 dairy herds. The samples were maintained in a cool state until arrival at the laboratory. They were examined by the agglutination test utilizing capillary tubes. The antigen prepared from yolk sacs of eggs infected with California strain No. 16 of *Coxiella burneti* was supplied through the courtesy of Dr. L. Luoto, Rocky Mountain Laboratory, Montana. Initial tests were performed on the undiluted milk. When mixed with the antigen in the capillary tubes, samples that contain antibody against *Coxiella burneti* develop a blue-black cream layer, or ring, overlying the uncoloured milk column. In addition, black agglomerates scattered throughout the milk column appear in tests on samples of high antibody content. The intensity of the ring colour varies with the antibody content of the milk, low-titred specimens may produce only a trace of colour. The herd milk samples that produced the reaction were titrated to determine the end point. Titration end points were read as the highest dilution in which either a coloured ring or agglomerates were visible. Screen tests were read after two hours at 37° C and titration tests after five hours at 37° C. Reading is facilitated by a light source directly above the capillary tubes. Fourteen of the 200 herds elicited a positive reaction to the capillary tube agglutination test. This is represented in Table I.

TABLE I—Q Fever. Milk Capillary Tube Agglutination Test Pooled Herd Milk Samples

No. of Herds	No. of Milking Animals	Herds Pos. No.	Herds Pos. %	Herds Neg. No.	Herds Neg. %
200	5,000	14	7.0	186	93.0

All of the 14 herd samples were titrated using the dilutions of 1/2, 1/4, 1/8, 1/16, 1/32, and 1/64. Eight of the positive herds showed a titre of 1/8, four a titre of 1/16 while two of the fourteen positive herds gave a titre of 1/32. This is illustrated in Table II.

When the positive herds were identified, a return visit was made to the farms to determine the incidence of infection among individual herd members. Composite milk samples were collected from each of the milking animals in the herd and they were returned to the laboratory for test for evidence of

TABLE II—Q Fever. Titration of Milk Capillary Tube Agglutination Test on Pooled Milk from Positive Herds

No. of Pos. Herds	Dilution Titre				
	1/4	1/8	1/16	1/32	1/64
14	—	8	4	2	—

rickettsial antibodies. The samples were examined also for brucellosis and mastitis to rule out the possibility of cross reactions with these diseases for Q fever. No reactions of this nature were observed. Some of the herd members showed evidence of mastitis, but all herds examined were free from brucellosis. The 14 positive herds that were examined in detail contained 334 lactating animals. In 60 animals, or 17.9%, demonstrable antibodies were observed in the milk sera as determined by the milk capillary agglutination test. All of the samples that produced reactions were examined in titre as illustrated in Table III.

TABLE III—Capillary Agglutination Test. Titration of Positive Composite Milk Samples for Q Fever

Herd No.	No. of Animals Tested	Herd Milk Titre	Dilution Titre of Pos. Samples						No. Negative
			1/2	1/4	1/8	1/16	1/32	1/64	
1	21	1/32	—	1	2	1	—	—	17
2	20	1/8	2	1	—	2	1	—	14
3	34	1/16	—	—	4	3	1	—	26
4	22	1/8	—	—	—	1	—	—	21
5	29	1/8	—	—	—	1	—	—	28
6	28	1/16	1	2	1	—	—	—	24
7	32	1/8	—	1	1	2	1	—	27
8	24	1/8	—	—	—	2	—	—	22
9	21	1/8	1	—	1	2	4	—	13
10	21	1/16	1	—	2	—	1	—	17
11	15	1/8	2	2	1	—	—	—	10
12	18	1/16	—	3	1	—	—	—	14
13	29	1/8	—	—	2	1	—	1	25
14	20	1/32	—	—	2	1	—	1	16

Sixty milk samples showed antibodies for *Coxiella burneti*. A return visit was made to the farms and blood was collected from each of the 60 animals that had produced a reaction in the milk serum. At the time of this visit, complete herd histories were recorded to determine if any clinical symptoms had occurred in the herd. In all herds investigated, no clinical evidence of even a minor nature could be found. The blood serum samples were examined for

evidence of antibodies against *Coxiella burneti* by the capillary agglutination test as described above. Again, as with the milk samples the titration was made utilizing dilutions from 1/2 to 1/64. With the exception of one sample all animals that had a reaction in the milk showed evidence of antibodies in the blood samples as further evidence of the presence of *Coxiella burneti*. In many of the cows the titre in the blood was lower than that in the milk. This may be observed in Table IV.

TABLE IV—CAPILLARY AGGLUTINATION TEST. TITRATION OF BLOOD SAMPLES FOR Q FEVER

Herd No.	No. of Animals Tested	Herd Milk Titre	Dilution Titre of Pos. Samples						No. Negative
			1/2	1/4	1/8	1/16	1/32	1/64	
1	21	1/32	1	2	1	—	—	—	17
2	20	1/8	3	3	—	—	—	—	14
3	34	1/16	1	—	—	1	—	5	27
4	22	1/8	—	—	—	—	—	1	21
5	29	1/8	—	1	—	—	—	—	28
6	28	1/16	1	2	—	—	—	1	24
7	32	1/8	2	1	1	—	—	1	27
8	24	1/8	1	1	—	—	—	—	22
9	21	1/8	1	5	1	1	—	—	13
10	21	1/16	2	2	—	—	—	—	17
11	15	1/8	3	2	—	—	—	—	10
12	18	1/16	—	3	—	1	—	—	14
13	29	1/8	—	2	2	—	—	—	25
14	20	1/32	—	1	3	—	—	—	16

The blood samples were also examined by the complement fixation test.

Commercial antigen prepared from the Nine mile strain of *Coxiella burneti* was used throughout this test. Overnight incubation at 4° C was employed. All usual controls were always included with each test.

TABLE V—Q FEVER. COMPLEMENT FIXATION TEST. CAPILLARY TUBE AGGLUTINATION TEST. COMPARISON OF MILK AND BLOOD TITRES IN POSITIVE HERDS

No. of Pos. Herds	No. of Cows	Pos. Reactors	Dilution Titre of Positive Samples							
			1/2	1/4	1/8	1/16	1/32	1/64	1/128	1/256
14	334	Milk—60	7	10	17	16	8	2	—	—
		Blood—59	15	25	8	3	—	8	—	—
		Blood (C.F. Test) —54	—	—	4	3	12	17	15	3

Eighty-five sera from cows whose milk was found to be positive for Q fever by the Luoto capillary agglutination tube method were examined. All of the

samples showed reactions to the complement fixation test, and the majority of the sera examined had a high titre for Q fever. Ninety per cent of the sera tested had titres of 1:32 or higher. This is shown in Table VI.

TABLE VI—Q FEVER. COMPLEMENT FIXATION TEST OF BOVINE SERA POSITIVE TO CAPILLARY AGGLUTINATION TUBE TEST

No. Examined	Complement Fixing Titre					
	1/8	1/16	1/32	1/64	1/128	1/256
85	4	6	19	25	27	4
49 (Controls)	—	Negative for Q Fever				

Since Q fever antigen is prepared from the infected yolk sacs of developing chick embryos, the specificity of the reaction was verified by testing each serum against the following antigens of chick embryo origin: normal chick embryo membrane, normal yolk sac, Rocky Mountain Spotted Fever and Influenza A antigens. No positive reaction was obtained with any of these antigens. The specificity of the reaction was further ascertained by testing an additional 50 bovine sera against Q fever antigen. With the exception of a slight reaction in one serum sample, all proved to be negative for Q fever antigen.

DISCUSSION

In the examination of the positive dairy herds, there was no history of evidence of sheep or goats having been raised in the environment of the herds. The herd histories did not reveal the purchase of animals away from the district, nor was there any evidence to indicate an increase in rodents or wild life on the farms where the animals were maintained. None of the animals were infested with lice or ticks. No attempt was made during this survey to sample the rodents or wild life for evidence of Q fever infection. The source of the infection in the positive herds remains undetermined. The herd owner and family associated with the positive herds did not disclose any evidence of a pneumonic type illness. No blood samples were collected during the survey from the owner or members of his family for test for antibodies for *C. burneti*.

The use of the capillary tube agglutination test as described by Luoto appears to be a comparatively simple and effective method of demonstrating antibodies for *C. burneti*. An excellent correlation exists between this method and the complement fixation test.

During the past ten years we have examined several thousand human sera from a variety of clinical syndromes, including atypical pneumonia, upper respiratory infections, influenza-like illnesses, and pyrexia of undisclosed origin. In none of these, with one exception, could Q fever antibodies be demonstrated. The exception was from a person recently arrived from Italy.

Some ten years ago, about 150 sera from local abattoir workers were tested for Q fever antibodies. All were negative.

In spite of our failures to demonstrate Q fever antibodies in human sera, the results of the capillary tube agglutination tests on the milk and blood bovine sera and the complement fixation tests on the sera indicate that Q fever infection is not uncommon in Ontario. These findings are difficult to interpret. Have we a variant of *Coxiella burneti* with little or no pathogenicity for humans? Are cattle infected with another organism antigenically related to *Coxiella burneti*? Or is there some other explanation?

A parallel may be drawn between Q fever in cattle and ornithosis in pigeons. We have demonstrated that approximately 35% of pigeons in southern Ontario are infected with the ornithosis virus and there is quite a number of pigeon fanciers in Ontario. However, during the last 15 years or so, we have had only one case of human psittacosis that could be directly traced to pigeons.

Summary

In the survey, composite raw milk samples were collected from 200 dairy herds shipping fluid milk to dairies in western Ontario. The milk samples were subjected to the capillary agglutination test using antigen supplied by Dr. L. Luoto, Rocky Mountain Laboratories, United States Public Health Service.

The samples from 14 herds gave a positive reaction for Q fever. Individual milk samples were collected from each of the 334 animals in these 14 herds and tested for evidence of Q fever, brucellosis and mastitis. Blood samples were collected from those cows whose milk elicited a positive reaction for Q fever. The blood sera were examined for Q fever agglutinins by the capillary agglutination tube method and the complement fixation test. Sixty animals (17.9%) from the 14 positive herds produced a reaction for Q fever in the milk and blood. All 14 herds contained reactors and the incidence within individual herds ranged from 1 to 8 animals.

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Résumé

Pour cette étude, on examina des échantillons collectifs de lait cru provenant de 200 troupeaux laitiers qui fournissent du lait sous forme liquide aux laiteries de l'ouest de l'Ontario. Les échantillons de lait furent soumis à l'épreuve d'agglutination en capillaire en utilisant l'antigène fourni par le Dr L. Luoto, de Rocky Mountain Laboratories, United States Public Health Service.

Les échantillons provenant de 14 troupeaux donnèrent une réaction positive avec l'antigène de la Fièvre Q. Des échantillons de lait individuel furent prélevés de chacun des 334 animaux de ces 14 troupeaux et testés pour la Fièvre Q, la brucellose et la mammite. Des échantillons de sang furent prélevés chez les animaux dont le lait avait donné une réaction positive pour la Fièvre Q. La présence des anticorps contre la Fièvre Q fut recherchée par la méthode d'agglutination en tube capillaire et par la réaction de fixation du complément. Soixante animaux (17.9%) provenant des 14 troupeaux positifs donnèrent une réaction positive pour la Fièvre Q dans leur lait et dans leur sang. Tous les 14 troupeaux contenaient des réacteurs et l'incidence dans les troupeaux individuels variait de 1 à 8 animaux. (Trad.: Dr V. Pavilanis).

Canadian Journal of Public Health

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THE FIFTIETH ANNUAL MEETING AND PUBLIC HEALTH CONGRESS IN HALIFAX

THROUGHOUT the fifty years of the Association an annual meeting of members has been held each year to receive reports of the year's work from the officers of the Association and from the chairmen of the various standing committees. The holding of the annual meeting has also been the occasion, with only three exceptions, for the convening of a national public health congress with a program of scientific papers. The outbreak of World War I in 1914 caused the cancellation of the planned congress in that year. In 1924, the Association was unable to provide a national meeting and in 1945 during World War II no national congress was possible. The omission of these congresses resulted in the incorrect numbering of the annual meetings. Thus, the annual meeting in 1958 in Vancouver was recorded as the forty-sixth. The forthcoming sessions in Halifax will mark the fiftieth annual meeting and the numbering of future annual meetings will follow in succession.

The public health congress in Halifax will present a program of papers covering the broad field of public health and will also afford the opportunity of hearing and meeting health workers representing rural and urban organizations in all parts of Canada. Halifax has much to offer to public health personnel in both the city health administration and the provincial health service.

One subject of special interest is housing. Halifax has a redevelopment program which may be the most important experiment in urban redevelopment so far undertaken by any Canadian city. This is the Mulgrave Park Project. It involves not only housing but the redevelopment of a part of the city's business district. It is being made possible with financial assistance provided under the National Housing Act. The families to be rehoused live in dwellings interspersed through the commercial district in what is one of the worst residential environments in the city. The project will add 350 new low-rental dwellings and permit the revitalizing of 13 acres of downtown area.

You have been planning to visit Halifax and the Maritimes? Here is a wonderful opportunity to supplement the sessions of the congress with a holiday in Nova Scotia. The Apple Blossom Festival will be in progress and June is one of the loveliest of months. Make your reservations now!

Observations on a Fluoridation Plebiscite

B. J. O'MEARA,[1] D.D.S., D.D.P.H.

A plebiscite was held in Charlottetown, Prince Edward Island, on February 10, 1960 to decide the question of fluoridation of the municipal water supply. The motion was defeated by 1,540 votes to 1,513.

FLUORIDATION has been an issue in Charlottetown for several years. About five years ago, a resolution on the procedure was presented to the Charlottetown City Council but was defeated. A year later, a similar resolution was approved by the City Council by a majority vote and a recommendation was sent to the Commissioners of Sewers and Water Supply that they proceed with fluoridation. These Commissioners have sole jurisdiction in such matters, but they reported that, in view of the opposition to the procedure, they would not act on the recommendation at that time. A year ago, another recommendation, this time approved unanimously by the City Council, was given to the Water Commissioners who then stated that they had studied the matter for four years but were unable to come to a decision, and therefore they would ask for a plebiscite.

Although democratic methods are very admirable, a decision on a scientific procedure like fluoridation should not be the responsibility of average individuals who have little or no knowledge of the subject. The decision should be the responsibility of their elected representatives who are in a position to study these matters, and who would be expected to act in the best interests of those who elected them. The City Council accepted their responsibility. The Water Commissioners did not. Even if they had rejected the recommendation presented to them, their action would have been more commendable.

It was requested that the plebiscite be held on the occasion of the next municipal elections. A special amendment to the appropriate Act by the provincial legislature was necessary for this to take place. This amendment was duly approved, but the wording of it was not above criticism. Only those eligible to vote in the municipal elections could also vote on the plebiscite. This restricted it to property owners and those who had paid their municipal taxes. The result of the plebiscite was to be decided by a majority vote, but no provision was made to prevent any who had multiple votes, as the result of owning property in more than one municipal ward, from voting more than once on the plebiscite. When this irregularity was pointed out, shortly before the election, voters were asked, on their honour, not to vote more than once on the plebiscite. This was patently absurd and, while some abided by it, others certainly did not. Lastly, no provision was made for a recount. Under the circumstances, this was unfortunate.

While it does not follow that the result would have been different if the plebiscite had been properly organized, it does give grounds for dissatisfaction when the result of the voting was so close.

From the time it was known that there was to be a plebiscite, it was agreed by the local dentists that a campaign would be organized to promote fluoridation. From the start it was realized that the prospects were not good. In a large majority of communities where the question of fluoridation has been put to a referendum, it has been defeated. A few months previously, in New Glasgow, Nova Scotia, a com-

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munity a short distance from Prince Edward Island, a plebiscite had been defeated by a majority of 5 to 1.

On the other hand, there were some points in our favour. The medical and dental professions were solidly in favour of fluoridation. There were no political pressures involved. The "Charlottetown Guardian", the only morning paper, was willing to give good co-operation. The local radio station was also most helpful. The evening paper, which had previously been opposed, was on this occasion non-committal.

Once the date of the plebiscite had been set, twelve months ahead, very little further public interest was apparent. It was decided therefore that, rather than commence the promotion early and run the risk of it falling flat before the date of the plebiscite, we should wait until nearer the time of the elections and then have the campaign worked up to its peak for that occasion. So, apart from furnishing to the newspaper from time to time news items on fluoridation, nothing more was done until some two months before the date. From then on, we used every method of promotion that we could think of:

During the months of December and January, nearly all the Home and School Associations, the service clubs and other organizations in the city, were given a talk, and frequently a film, on fluoridation, and pamphlets were given out.

Pamphlets were distributed through the dentists', and several of the physicians', offices. The Health League of Canada also sent literature to a selected list of citizens.

For some years it had been customary for dental hygienists to visit the city schools to examine the children and send home to their parents notification of treatment required. On this occasion the letters of notification, containing in addition a pamphlet on fluoridation, were held back and not distributed until a week before the plebiscite.

A clinic for the topical application of sodium fluoride has been operating in Charlottetown for several years. All the parents of children so treated received a letter by mail asking for their support.

Television time was taken for an interview with the medical officer of health for Charlottetown, the president of the P.E.I. Medical Association and the Registrar of the P.E.I. Dental Association. In addition there were a number of interviews on the radio, and "spots" on both television and radio.

For two weeks before, through the kind offices of the "Charlottetown Guardian", articles appeared in the paper daily, under the name and photograph of a different local dentist each day, entitled "The Case for Fluoridation". These were written with a local flavour and attempted to explain its benefits and answer the usual objections. It should be added that the idea for this type of promotion was obtained from "The Daily Nugget" of North Bay, Ontario, which used it, with greater success, in 1955.

Letters and statements were also published from physicians, from the P.E.I. Medical Association, and from the provincial Minister of Health, strongly advocating fluoridation. These were further supported by some excellent editorials in the "Charlottetown Guardian".

For two days before the plebiscite, large advertisements were inserted in the newspapers, pressing for a favourable vote, over the names of 58 physicians and dentists of Charlottetown.

As can be seen, quite an intensive promotion campaign was instituted. There was no organized opposition, nor was there any large quantity of anti-fluoridation material distributed. A flood of anti-fluoridation letters did appear in the newspapers and, as is very typical, these were delayed until the last two days so as to make it as difficult as possible to answer and refute them. The majority of them were answered, however. There were also people who spent a busy time on the telephone on the last day or two, and who drove many voters to the polls on the day of the election, solely to obtain votes against fluoridation. It is very probable that these efforts were mainly responsible for obtaining the few extra votes necessary to turn the scales. It is unlikely though that the main body of voters was much influenced by these last minute efforts. Why then did the majority of voters, in spite of the promotion campaign, and against the well-publicised advice of their own doctors and dentists, vote against fluoridation?

A study of the voting by polling stations shows that the heaviest voting against

fluoridation came from the poorer districts. Although this is rather to be expected, it is a tragedy that the very people who would have benefited most were those who opposed it most. In the better residential areas the vote was strongest for fluoridation, but there was a surprisingly large opposing vote too. Much of this appears to have come from the older age-group.

One factor which, strangely enough, had a very definite adverse effect was the present good quality of the Charlottetown water supply. The chlorine content is generally low, in contrast to places near at hand on the mainland where it is unusually high. In spite of every effort to persuade people that this taste was due to chlorine, that fluoride is tasteless, and that these places did not have fluoridation in any case, many still voted against fluoridation for this reason.

In discussion with different people afterwards, individual observations were interesting and informative. That fluoridation is a humanitarian public health measure, that it would give the opportunity for better health for their own children, often faded into the background. Instead, the plebiscite became just a contest, and rather a sporting one at that. Much disappointment was expressed that nobody would stand up and present "the other side". There was disappointment too, and even suspicion, because all the Charlottetwo doctors and dentists supported it.

One constructive criticism was that the promotion campaign came too late, that it would have been better to have stimulated the opposition into greater efforts earlier in order to have had more time to refute their statements, rather than to allow them to be presented at the last moment. This could be true but it is questionable.

Another criticism was that there was too much promotion. This may not sound very credible and yet there is quite likely to be some truth in it. A number of people remarked that there was resentment at the high-pressure methods used. If this is the case, then it is a new aspect to be considered in another campaign. As a summing-up, one could not do better than quote, in part, from an editorial in "The Summerside Journal & Pioneer", a Prince Edward Island paper which, incidentally, is generally against fluoridation.

"We are not much taken, as a general rule, with the idea of plebiscites. Usually they are a device to shift from the shoulders of the elected representatives of the people a responsibility that the representatives were elected to carry out. There are very few questions on which the people can be as well informed as the elected body whose members have at their disposal all the evidence for and against any particular proposal. It is not, however, our intention at this time to discuss plebiscites in general, but rather the one that was held in Charlottetown this week in connection with the civic election. This one was an interesting study in human behaviour.

"We are not concerned with the merits or otherwise of fluoridation, or whether or not the people voted wisely, but we do find it strange that they voted the way they did in the light of the evidence and and the manner in which it was presented to them. Perhaps it was just an example of inherent human stubbornness. People just don't like being stampeded into any action and perhaps this was where the proponents made their error. They may have overstated their case."

Most of the information made available to the people, until the last couple of days, favoured this treatment of the water supply. Not only that but most of the information was put forth over the signatures, and with the authority and prestige, of the doctors and dentists of the city. Normally, most people accept their advice with the greatest of respect. Most of us at times must place our lives, and the lives of those we love, completely in the hands of the medical profession and we do it with the utmost confidence. It might almost be called a childlike confidence, so trusting is it. We permit surgeons to place us under anaesthesia, to operate on us, and we do it with full trust that they are men of competence, training and conscience. Yet in spite of all this confidence and trust, the majority of citizens of Charlottetown who voted in this plebiscite apparently did not trust or believe the doctors when they told them that fluoridation would be beneficial in preventing dental decay in children and that it had no harmful effects on the body.

Association News

British Columbia Branch

The annual meeting of the British Columbia Branch of the Canadian Public Health Association was held in Victoria on April 21 to coincide with the annual Institute of the Provincial Health Branch held April 19–22. The speakers were the President of the Association, Dr. J. S. Robertson, Deputy Minister of Health of Nova Scotia, and Professor Lorne Brown of the College of Education, University of British Columbia.

Manitoba Public Health Association

The spring meeting of the Manitoba Public Health Asscciation was held April 18. Dr. J. S. Robertson, D.P.H., President of the Canadian Public Health Association and Deputy Minister of Health of Nova Scotia was the guest speaker and he discussed the relationships of the Manitoba Public Health Association and the national body. Also contributing to the program was Dr. Hugh Malcolmson who outlined the province's new alternate care and housing program. The meeting concluded with a panel discussion of current problems relative to a health department.

Ontario Public Health Association

At the Board of Directors' Meeting of the Ontario Public Health Association held April 1 a Press Committee was appointed to prepare material of interest to the members for inclusion in the Canadian Journal of Public Health. Miss M. Cahoon was appointed secretary of this committee which includes the following members: Dr. G. K. Martin, Secretary of the O.P.H.A., Miss E. M. Scott, Public Health Nursing Section, Dr. R. A. Kennedy, Health Officer's Section, Dr. R. E. Feasby, Dental Public Health Section, Dr. D. Garrick, Veterinary Public Health Section, Mr. D. E. Plummer, Environmental Hygiene Section, and Mr. L. McCreesh, Plumbing Inspectors' Section.

Dr. A. R. J. Boyd, Past-President of the Ontario Public Health Association, was asked by the Board of Directors to take the greetings of the Ontario Public Health Association to the meetings of the Royal Society for the Promotion of Health in Great Britain in April.

Members of the Ontario Public Health Association will be pleased to know that the Hon. Dr. M. B. Dymond, Minister of Health, is arranging a meeting with members of his department and representatives of the Department of Municipal Affairs to discuss Resolution Number Five passed at the 1959 annual meeting of the Ontario Public Health Association regarding provision of transferable pensions for public health personnel in Ontario. The committee appointed by the Board of Directors included Miss H. Fasken, Mr. J. Robson, and Dr. G. K. Martin under the chairmanship of Dr. M. Jarrett who prepared the brief presented to Dr. M. B. Dymond. A further report will be published following the meeting which is tentatively scheduled for the end of May.

News Notes

Federal

A three-day national tuberculosis conference was held in Ottawa on March 21–23 sponsored by the Canadian Tuberculosis Association and the Department of National Health and Welfare and the Dominion Bureau of Statistics. The conference called together federal and provincial authorities to review all aspects of tuberculosis control and to decide on measures necessary to conquer tuberculosis in Canada.

Fifty-five candidates attended the tenth course for physicians and dentists in "Mass casualty care" at the Canadian Civil Defence College, Arnprior, March 7–11, sponsored by the Department of National Health and Welfare. These included 41 physicians and surgeons, 14 dentists, 6 representatives of the

Canadian Forces Medical Service, one member of the Royal Canadian Dental Corps and 7 physicians from the Department of National Health and Welfare. Contributors to the program included members of the Emergency Health Services Division of the federal Department, Dr. H. R. McLaren of the Dental Health Division, and staff members of the Canadian Civil Defence College as well as members of the Defence Research Board and of Atomic Energy of Canada Limited. Dr. K. F. Wells, Veterinary Director General of the Department of Agriculture, outlined the role of the veterinarian in Emergency Health Services.

A meeting of the Canadian Medical Association Committee on the Medical Aspects of Traffic Accidents was held in Ottawa, March 11–12 and was attended by the members of the nucleus committee and the ten chairmen of the provincial committees. Dr. D. Kubryk, medical consultant of the Epidemiology Division and secretary of the nucleus committee, was also appointed secretary of the national committee.

The Dominion Government assisted in the national conference which resulted in the setting up of the National Heart Foundation in 1956; the federal treasury has since made available nearly $3,000,000 under the National Health Grants for heart research and services. Mr. Monteith said: "It is also significant that annual grants have been increasing in recent years with those for 1959–60 reaching an all-time high of over $679,000."

Since the end of World War II, two million immigrants have arrived in Canada. One of every eleven persons in Canada arrived in this country as an immigrant from 1945 to 1959, providing 11.3% of the Canadian working force. Immigration totalled 1,912,000.

British Columbia

The annual Institute of the Provincial Health Branch was held at the Empress Hotel in Victoria April 19 to 22. There was a review of public health accomplishments during the year, and a stimulating participation in Institute sessions by a number of visiting speakers. Chief guest was Dr. H. L. Dunn, head of het National Office of Vital Statistics, Washington, D.C. Dr. Dunn spoke each day on topics related to the theme of "levels of wellbeing" in our society. Guest speakers from the University of British Columbia were Dr. B. D. Graham, recently appointed head of the Department of Paediatrics; Dr. H. V. Warren of the Department of Geology and Dr. J. M. Mather, head of the Department of Preventive Medicine. From Ottawa, there was Miss Esther Robertson, nursing consultant of the Department of National Health and Welfare.

There have been two recent senior public health nursing appointments in the Boundary Health Unit at Cloverdale: Mrs. Jean Keays, as acting supervisor, and Miss Mary Kartner as acting senior nurse.

"A New View on Employee Health and Labour-Management Objectives" was the theme of the Third Occupational Health Conference sponsored by the Greater Vancouver Health League, the Vancouver and District Labour Council, and the Vancouver Board of Trade. The conference took place in Vancouver on February 26 and 27. The views expressed by leaders in labour, management and occupational medicine touched on current trends, deficiencies, discriminatory practices and mental health aspects of occupational health programs today.

Saskatchewan

The government has appointed a survey committee to assist in the Aged and Long Term Illness Project with representation from the various interested agencies. The committee's terms of reference are to gather facts, study current resources, outline services needed, promote public education and prepare a final report for the provincial government and other agencies. Miss Lola Wilson, director of the Project, and other necessary staff will serve as the secretariat to the main survey committee.

The continued progress in rehabilitation development in Saskatchewan is evidenced by the fact that the following hospitals are proceeding with plans for new physiotherapy or physical medicine departments: Outlook Union Hospital; Leader Union Hospital; Yorkton Union Hospital; Weyburn Union Hospital; Providence Hospital, Moose Jaw; Holy Family Hospital, Prince Albert; St. Paul's Hospital, Saskatoon.

The Saskatchewan Branch of the Eye Bank is the sixth to be opened in Canada. It is sponsored by the Canadian Ophthalmological Society and the Canadian National Institute for the Blind and operates through the Department of Ophthalmology of the Medical College, University College, Saskatoon.

At the organization meeting of the Humboldt-Wadena Health Region, the town of Humboldt was chosen as the regional center and Mr. F. Messenger of Kelvington was elected chairman of both the regional health council and the regional board of health. Dr. Elizabeth Nelson is the medical health officer and was also appointed secretary of the regional board.

A refresher course for sanitary officers was conducted from January 18 to February 12 by the Department of Social and Preventive Medicine, University of Saskatchewan, at the request of the provincial Department of Public Health. Twelve sanitary officers from the

provincial health regions and one from the city of Saskatoon were elected to attend the course. Current problems in the community were presented and references made to the major disease problems from the epidemiological standpoint. In order to further his effectiveness, substantial attention was paid to the relationship between the sanitary officer and other members of the community health team. Contributing to the course were members of the Colleges of Medicine, Engineering, Agriculture and Home Economics.

To encourage the installation and use of seat belts in motor cars, all new cars purchased for the staff of the Department of Public Health are being equipped with seat belts in the belief that they save lives and reduce the severity of injuries in accidents.

The Regina Chapter of the Saskatchewan Registered Nurses Association sponsored a course on rehabilitation nursing during April, 1960. In early fall, the Saskatchewan Registered Nurses Association hopes to implement similar courses in many other regions. These could be adapted as one-day sessions, either on a chapter basis or in a local institution. Visual education aids; namely the film "Journey Back" and a series of "Medichrome" slides are being provided by the Health Education Division, Department of Public Health.

Manitoba

The sixth annual Indian and Metis conference sponsored by the Welfare Council of Greater Winnipeg was held Feb. 24–27 with more than 450 persons in attendance. Speakers included Dr. G. Monture, Ottawa and Dr. G. Boyce, U.S. Department of the Interior, Indian Bureau. Father Andre Renaud, Ottawa, was in charge of the discussion group leaders. Resolutions passed will be presented to the Provincial Government.

Dr. Mary Russell, a graduate of London University, has joined the staff of the Manitoba Health Department as medical director and is located temporarily at the St. James Health Unit. Dr. Russell spent a year in obstetrics and gynecology at Grace Hospital Winnipeg, following which she served as a general practitioner with the Abbott Clinic.

Dr. Leslie T. Truelove, a graduate of Oxford University, has been appointed chief of staff of the Manitoba Rehabilitation Hospital now being constructed in Winnipeg. He will direct a team of therapists and act as consultant in physical medicine. He will also be responsible for the teaching program in the school of physiotherapy and occupational therapy which will occupy the hospital's third floor.

The annual Medical Directors' Conference was held April 19 to 22, with Medical Directors from all over the province attending.

To improve the standards of fish handling in the province a two-week course in the practical aspects of fish bacteriology is being held May 9 to 20 at the University of Manitoba. Those participating include the University of Manitoba, Manitoba Department of Health and the federal and provincial departments of fisheries. Leading figures in the fishing industry will take an active part in the discussions and field trips will be taken to a few of the fishing plants to observe firsthand the methods of fish handling. There will also be practical laboratory experience.

A foodhandling course sponsored by the Virden Health Unit was conducted during February with a registration of 62 under the direction of Mr. A. Matwichuk, Sanitary Inspector.

Ontario

At the suggestion of the Hon. Dr. M. B. Dymond, Minister of Health, a two-day conference was held in Toronto, Jan. 22–23 relating to the shortage of nurses. The delegates constituted a cross-section of the community In his opening address Dr. Dymond said the shortage was brought about by population increase, hospital expansion, advances in medicine and changing public tastes and conceptions of how to care for the sick.

Miss Nettie Fidler, Director of the University of Toronto School of Nursing, said that the College of Nursing would raise nursing standards and would be able to assist all nursing schools with training and research. Comparing such a college to the College of Physicians and Surgeons, Miss Fidler said it would strengthen and improve the relationship between physicians and nurses. The establishing of a Nursing Foundation would assist prospective nurses with scholarships, bursaries and grants. Miss Fidler added that such action would place nursing schools on the same level as medical schools in relation to hospitals.

At the six workshops during the conference panel members discussed every phase of the nursing profession with special emphasis on how to increase the number of nurses in Ontario. All panelists agreed that nurses were expected to cope with a great deal of paper work which discourages nurses who enter the profession with the sole purpose of nursing the sick. It was suggested that clerical duties be assigned to other workers. It was suggested that research was necessary to determine the facts concerning the shortage. The investigation should cover proper functions of the nurse, facilities she must work well with, her status in the community and hospital, and her salary.

Traffic accidents increased during the first 11 months of 1959. The Department of Transport of Ontario reports that traffic accidents

totalled $72,429 (7.4% increase over 1958); traffic deaths reached 1,070 (5.7% increase). During the year licensed cars increased 110,256. Ontario drivers drove a billion miles more than in 1958.

Dr. John E. F. Hastings, assistant professor of Public Health and Preventive Medicine, School of Hygiene, University of Toronto, has been awarded a study and travel fellowship by the World Health Organization. From May to September he will spend approximately one month in each of several countries including the United Kingdom, Scandinavia and the Soviet Union, with shorter periods in Switzerland, India, Ceylon and Japan. He will study medical undergraduate and graduate education, health and welfare services and health insurance programs.

Quebec

In 1959, Montreal recorded the lowest general mortality rate in its history, 8.7 per thousand population. The maternal mortality rate was 0.33 per thousand live births and the infant mortality rate 27 per thousand live births.

Dr. Louis-Georges Huard, B.A., D.P.H. has been appointed district health officer of the Saint-Jacques Health District of Montreal. Dr. Huard engaged in private practice for 15 years following graduation from Laval University, Quebec in 1935. He was appointed to the Department of Health of Montreal in 1952.

The following members of the Department of Health were awarded scholarships for the academic year 1958–59 under the federal-provincial health grants: Dr. Robert Fortin, D.P.H., Dr. C.-A. Grégoire, D.H.V.P., Dr. Théodore Mongon, D.H.P. Misses Louise Olivier and M.-P. Barrett, supervisors, bachelor in science in nursing and Misses Simone Brazeau, Marthe Santis and Marie Dumon, diploma in public health nursing. Dr. Fortin gained the highest marks at the examination and Miss Brazeau received the Lieutenant-Governor's Medal for the highest standing in her examinations.

Nova Scotia

The Atlantic Health Unit held a staff meeting March 3 and 4. Miss Hazel Roland, director of the division of nutrition spoke on school health. The following participated in the discussion of the work of the unit: Mr. Ralph Ricketts, Nova Scotia Tuberculosis Association; Mr. Daniel Rooney, welfare officer; Mr. A. C. Sparks, rehabilitation counsellor; Miss Patricia Towler, speech therapist.

Miss Edna Walsh, nursing consultant, maternal and child health division, addressed the maternal and infant care institute held in Moncton Feb. 8–19.

Miss Edna Pitts, public health nurse, Armdale, addressed those attending the institute "Nursing Aspects in the Mental Health Program" held in February at Dalhousie University.

Miss Joan Palmer, R.N., B.N., supervisor of nurses, Northumberland Division, has been granted a year's leave of absence and will engage in further studies in England. Miss Vivian Douglas, R.N., Amherst, has been appointed acting supervisor of nurses in the Northumberland Division.

Books and Reports

THE USE OF RADIO-ACTIVE ISOTOPES IN THE STUDY OF EXPERIMENTAL TUBERCULOSIS. *Joseph Sternberg, Ph.D., Institute of Microbiology and Hygiene, University of Montreal. Published by S. Karger, Basel, Switzerland and New York, 1958, 96 pp.*

Dr. Sternberg is an eminent Canadian research worker whose studies of radio-isotopes in the field of bacteriology are well known. His studies are conducted in the Institute of Microbiology and Hygiene of the University of Montreal. This monograph was reprinted from *Advances in Tuberculosis Research*, Vol. 9. All bacteriologists will read with interest the way in which technical problems were overcome in the organization of a radio-isotope laboratory adapted to work in experimental tuberculosis. *In vitro* studies with labeled microbes and *in vivo* studies resulted in important new findings. The study of the action of anti-tuberculous drugs was approached either with labeled bacilli or with labeled drugs.

HISTORY OF AMERICAN MEDICINE. *A Symposium. Edited by Felix Marti-Ibañez, M.D., M.D. Publications, Inc., New York 22, 1959, 181 pp., $4.00.*

This is a monograph in book form and one of the MD International Symposia which are published periodically. This symposium has contributions by twelve

medical historians. Some of the chapters included are: The Evolution of American Medical Literature, The Evolution of Medical Research in the United States, A Brief Sketch of the Rise of American Medical Societies, Guideposts in the History of American Medicine, Medicine in the Era of the American Revolution, and a number of other essays. It presents a unique insight into the history of American medicine.

THE NATURE OF RETIREMENT. *Elon H. Moore, Ph.D. Edited by Gordon F. Streib, Ph.D. Published by Brett-Macmillan Ltd., Galt, Ont., 1959, 217 pp., $4.50.*

The late Dr. Elon H. Moore, professor of sociology for many years in the University of Oregon, presented in this small volume an appraisal and analysis of most of the problems of retirement: The Choice Regarding Retirement, The Economic Aspects, Preparation for the Retirement Standard of Living, Substitutes for the Job, Social and Familial Relationships in Retirement, Changing One's Residence, and many others. The author obtained research information through interviewing 923 persons concerning their own retirement experience or that of others. The group studied was largely representative of the middle class. Dr. Gordon F. Streib, Cornell University, edited the volume following Dr. Moore's death. The book is a valuable and sound guide and is presented in an interesting style.

FOOD POISONING. *Elliot B. Dewberry, M.B.E., F.R.S.H. Leonard Hill (Books) Limited, London, N.W.1, England. Fourth Edition, 1959, 411 pp., 40 plates, 45s.*

The publication of the fourth edition indicates the demand for this work. It has been revised, rewritten, and enlarged, incorporating the latest information. Part I deals with Bacterial Food Poisoning, Part II with Staphylococcus Food Poisoning and Food Hygiene, Part III with Poisonous Metallic Salts, Poisonous Plants, Fungi, Fish and Shell-Fish and Food Allergy, Part IV with Botulism, Part V with Canned Foods and their Inspection, Part VI with Laboratory Investigation of Food-Poisoning Cases. The volume is a highly satisfactory reference book including historical as well as current references at the end of each chapter. It is a book equally of value on this continent and in Europe.

FOOD, *The Yearbook of Agriculture, 1959. The United States Department of Agriculture. Superintendent of Documents, Washington 25, D.C., 736 pp., $2.25.*

Food takes its place among many Yearbooks of Agriculture, a long series of valuable volumes that have been printed for 110 years. Included in the titles have been *Land, Soil, Water, Marketing,* and *Plant Diseases.* The 1959 volume deals with food. The chapter headings include: Backgrounds, Nutrients, Health, Allowances, Our Needs, Quality, Preparation, Costs, Trends, Learning, and Programs. The chapters have been contributed by 72 nutrition experts. This is a solid, authoritative, complete book that places the details of nutrition in proper perspective and counteracts half-truths about food. For the health worker it is a mine of information and a book he will enjoy reading. The Yearbooks of Agriculture are published under annual congressional appropriations which make possible the distribution at a minimum price.

COMING MEETINGS

Canadian Public Health Association and Nova Scotia Branch, Nova Scotian Hotel, Halifax, N.S., May 31–June 2, 1960.

Canadian Federation of Biological Societies, University of Manitoba, Winnipeg, Man., June 8–10, 1960.

Canadian Medical Association, Banff, Alta., June 13–17, 1960.

Canadian Dietetic Association, Queen Elizabeth Hotel, Montreal, Que., June 14–16, 1960.

Canadian Tuberculosis Association–60th annual meeting, Chateau Laurier, Ottawa, Ont., June 27–30, 1960.

Occupational Health–Thirteenth International Congress, Waldorf-Astoria, New York City, N.Y., U.S.A., July 25–29, 1960.

American Public Health Association–88th annual meeting, San Francisco, Calif., U.S.A., Oct. 31–Nov. 4, 1960.